

EPSON®

POWERSPAN.

User's Guide



Printed on recycled paper with 10% post-consumer content

IMPORTANT NOTICE DISCLAIMER OF WARRANTY

Epson America makes no representations or warranties, either express or implied, by or with respect to anything in this manual, and shall not be liable for any implied warranties of merchantability and fitness for a particular purpose or for any indirect, special, or consequential damages. Some states do not allow the exclusion of incidental or consequential damages, so this exclusion may not apply to you.

COPYRIGHT NOTICE

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Epson America, Inc. No patent liability is assumed with respect to the use of information contained herein. Nor is any liability assumed for damages resulting from the use of the information contained herein. Further, this publication and features described herein are subject to change without notice.

TRADEMARKS

EPSON and PowerSpan are registered trademarks of Seiko Epson Corporation

The power-on diagnostic error messages and tone codes in Appendix A are copyright 1985-1992, Phoenix Technologies, Ltd.

General notice: Other product names used herein are for identification purposes only and may be trademarks of their respective owners. EPSON disclaims any and all rights in those marks.

Important Safety Instructions

Read all of these instructions and save them for later reference. Follow all warnings and instructions marked on the computer.

- Unplug the computer before cleaning. Clean with a damp cloth only. Do not spill liquid on the computer.
- Do not place the computer on an unstable surface or near a radiator or heat register.
- Do not block or cover the openings in the computer's cabinet. Do not insert objects through the slots.
- Use only the type of power source indicated on the computer's label.
- Connect all equipment to properly grounded power outlets. Avoid using outlets on the same circuit as photocopiers or air control systems that regularly switch on and off.
- Do not let the computer's power cord become damaged or frayed.
- If you use an extension cord with the computer, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating. Also, make sure the total of all devices plugged into the wall outlet does not exceed 15 amperes.
- Except as specifically explained in this *Users Guide*, do not attempt to service the computer yourself.
- Unplug the computer and refer servicing to qualified service personnel under the following conditions:

If the power cord or plug is damaged; if liquid has entered the computer; if the computer has been dropped or the cabinet damaged; if the computer does not operate normally or exhibits a distinct change in performance. Adjust only those controls that are covered by the operating instructions.

- If you plan to use the computer in Germany, observe the following:

To provide adequate short-circuit protection and over-current protection for this computer, the building installation must be protected by a 16 Amp circuit breaker.

Beim Anschluß des Computers an die Netzversorgung muß sichergestellt werden, daß die Gebäudeinstallation mit einem 16 A Überstromschutzschalter abgesichert ist.

Importantes instructions de sécurité

Lire attentivement les instructions suivantes et les conserver pour les consulter en cas de besoin. Observer soigneusement tous les avertissements et directives marqués sur l'ordinateur.

- Débrancher l'ordinateur avant de le nettoyer. N'utiliser qu'un chiffon humide. Veiller à ne pas renverser de liquides sur l'appareil.
- Ne pas placer l'ordinateur sur une surface instable ni près d'une source de chaleur.
- Ne pas bloquer ni couvrir les orifices d'aération de l'appareil. Ne pas introduire d'objets dans les ouvertures.
- Utiliser seulement le type de source d'alimentation électrique indiqué sur l'étiquette.
- Tout l'équipement doit être branché sur des prises de courant avec contact de terre. Ne jamais utiliser une prise sur le même circuit qu'un appareil à photocopies ou un système de contrôle de ventilation avec commutation marche-arrêt automatique.
- S'assurer que le cordon d'alimentation de l'ordinateur n'est pas abîmé ni effiloché.
- Dans le cas où on utilise un cordon de rallonge avec l'ordinateur, s'assurer que l'intensité en ampères requise pour tous les appareils branchés sur ce cordon ne soit pas supérieure à la capacité du cordon. S'assurer aussi que cette intensité ne dépasse jamais la somme de 15 ampères pour l'ensemble des appareils.
- Sauf dans les cas spécifiques expliqués dans ce manuel de l'utilisateur, ne pas essayer d'entretenir ou de réparer l'ordinateur soi-même.
- Débrancher l'ordinateur et contacter un technicien qualifié dans les circonstances suivantes:
Si le cordon ou la prise sont abîmés; si un liquide a pénétré à l'intérieur de l'appareil; si on a laissé tomber l'appareil ou si le boîtier est endommagé; si l'ordinateur ne fonctionne pas normalement ou fonctionne d'une manière très différente de l'ordinaire. N'ajuster que les commandes décrites dans les directives.
- Pour utiliser l'ordinateur en Allemagne, il est nécessaire que le bâtiment soit muni d'un disjoncteur de 16 ampères pour protéger l'ordinateur contre les courts-circuits et le survolage.

Contents

Introduction

SCSI Subsystem	2
Software	3
Features of This Manual	3
Where to Get Help	4
CompuServe On-line Support	5

Chapter 1 Setting Up Your System

Preparing to Set Up Your System	1-1
Installation Overview	1-2
Setting the Voltage Selector Switch	1-4
Installing Optional Equipment	1-5
Connecting Peripheral Devices	1-6
Turning On the System.....	1-8
Configuring Your System	1-10
Equipment Log	1-11

Chapter 2 Running the SETUP Program

Starting the Program	2-2
Selecting Options	2-4
Selecting Settings	2-4
Hard Disk Drive Types	2-13
Exiting SETUP	2-16

Chapter 3 Running the EISA Configuration Utility

How to Use This Chapter	3-3
The Configuration Process	3-4
Using Configuration Files	3-4
Using the Keyboard	3-5
Using a Mouse	3-5
Using On-line Help	3-6

Configuring Your System	3-7
Starting the Program	3-7
Setting the Date and Time	3-8
Performing the Configuration Steps	3-9
Adding or Removing a Board	3-11
Defining the Configuration Settings	3-11
Hard Disk Drive Types	3-25
Using Advanced Configuration Options	3-28
Using Alternate Configuration Files	3-29
Creating an Alternate SCI File	3-30
Loading an Alternate SCI File	3-31
Using Special Modes	3-31
Using the SD Command	3-32
Using the CF Command	3-34
Copying the Configuration Files to a Hard Disk	3-36

Chapter 4 Using Your Computer

Working Comfortably	4-2
Using the Right Furniture	4-2
Positioning Your Monitor	4-3
Lighting Your Workspace	4-4
Using the Keyboard and Mouse	4-4
Maintaining Good Posture and Work Habits.	4-5
Locking the Computer's Cover	4-6
Locking the Front Panel Door	4-7
Disabling the Keyboard and Mouse	4-8
Using the Password Features	4-9
Setting Passwords	4-10
Entering Passwords	4-12
Changing or Deleting Passwords	4-13
Locking the Keyboard	4-16
Changing the Processor Speed	4-17
Entering Keyboard Commands	4-18
Using the EISA System Utilities	4-19
Controlling the Speaker	4-20
Controlling the Cache	4-21
Using the Security Features	4-23

Installing the Video Drivers and Utilities	4-24
Installing MS-DOS Video Drivers and Utilities	4-24
Installing Windows 3.1 Drivers	4-25
Using the SCSI Subsystem	4-26
Installing SCSI Terminators	4-27
Installing SCSI Devices	4-27
Configuring the SCSI Subsystem	4-28
Installing SCSI Software	4-28
Using Special Configurations	4-29
Operating Your Computer from a Remote Location	4-30

Chapter 5 ***Accessing Internal Components***

Special Precautions	5-1
Removing the System Covers	5-2
Removing the External Side Cover	5-3
Removing the Internal Main System Board Cover	5-4
Replacing the System Covers	5-5
Replacing the Internal Main System Board Cover	5-5
Replacing the External Side Cover	5-7
Removing the Front Panel	5-8
Replacing the Front Panel	5-9

Chapter 6 ***Installing and Removing Options***

Main System Board Map	6-2
Removing the CPU Card	6-3
Installing the CPU Card	6-4
Installing the Dual-Pentium 66 ASIC Chip	6-6
Installing an Option Card	6-7
Removing an Option Card	6-10
Using the VGA Feature Connector	6-10
Memory Modules	6-11
Installing Memory Modules	6-12
Removing Memory Modules	6-14
Adding Video Memory	6-15
Setting Main System Board Jumpers	6-18

Chapter 7 Installing and Removing Disk Drives

Using the Correct Drive Bay	7-2
Installing a Drive in an External Bay	7-3
Removing a Drive from an External Bay	7-8
Installing and Removing an IDE Hard Disk Drive	7-9
Removing the IDE Drive Bay Assembly	7-10
Installing an IDE Drive.	7-11
Removing an IDE Drive.	7-12
Replacing the IDE Drive Bay Assembly.	7-13
Connecting the IDE Ribbon and Power Cables	7-14
Installing a SCSI Drive.	7-18
Installing the SCSI Ribbon and Power Cables	7-22
Removing a SCSI Drive.	7-25

Appendix A Troubleshooting

Identifying Your System	A-1
Error Messages	A-3
Power-on Diagnostic and Boot Errors	A-3
Run-time Error Messages	A-14
Error Tone Codes	A-15
Power or Lock-up Problems	A-17
Password Problems	A-19
Keyboard Problems	A-21
Monitor Problems	A-22
Diskette Problems	A-23
Diskette Drive Problems	A-23
Hard Disk Problems	A-24
Software Problems	A-25
Printer Problems	A-26
Option Card Problems	A-26
Memory Module Problems	A-27
Mouse Problems	A-28
SCSI Drive Problems	A-29

Appendix B Specifications

Main System Board	B-1
CPU Card	B-2
Interfaces	B-2
Controllers	B-3
Keyboard	B-4
Mass Storage	B-4
Physical Characteristics	B-4
Environmental Requirements	B-5
Power Supply	B-5
System Memory Map	B-7
Input/ output Addresses	B-8
System Interrupts	B-10
DMA Channels	B-11

Glossary

Index

Introduction

The EPSON®PowerSpan® computer is a powerful, versatile system ideally suited for use as a network file server. It incorporates the latest EISA (Extended Industry Standard Architecture) technology and a built-in dual-SCSI (Small Computer System Interface) subsystem in a convenient tower design. Its exceptional features and flexibility enable you to use the most advanced peripheral devices and software while maintaining full compatibility with ISA technology.

Your system includes the following features:

- ☐ 8MB of RAM on a single inline memory module (SIMM), expandable to 128MB using 1MB, 2MB, 4MB, 8MB, 16MB: or 32MB single- or double-sided SIMMs
- ☐ A removable card containing one of the following CPUs:
 - Intel® 486DX2/66 CPU with 8KB internal and 128KB secondary cache memory and an integrated math coprocessor
 - Intel Pentium® 60 MHz or 90 MHz CPU card; the 60 MHz Pentium CPU has 256KB of cache and the 90 MHz Pentium CPU has 512KB of cache
 - Intel Dual Pentium 66 MHz CPU card for use with SCO® UNIX® MPX only
- ☐ One built-in parallel and two built-in serial interfaces, plus a built-in VGA controller providing standard VGA resolutions
- ☐ IBM®PS/2® compatible mouse port and keyboard port
- ☐ Eight EISA bus master expansion slots (compatible with 32-bit EISA cards and 8- or 16-bit ISA cards)

- ☐ SCSI-II subsystem consisting of two SCSI channels with interfaces built into the main system board
- ☐ IDE hard disk drive interface for two hard disk drives
- ☐ Diskette drive controller for two diskette drives
- ☐ Mass storage space for up to nine half-height drives: two internal bays for IDE hard disk drives or SCSI drives, four internal bays for SCSI drives, and three externally accessible bays for diskette, tape, or CD-ROM drives.

The built-in interfaces let you connect basic peripheral devices directly to the computer, leaving the expansion slots for optional devices such as a modem and a networking card.

Your computer provides a 32-bit wide EISA bus that supports 64-bit processors by employing advanced bit-interleaving technology. In addition, the fast EISA burst mode capability enables data transfers of up to 66MB of data per second through the EISA bus.

In addition, your computer offers multiple-level security features to protect both the hardware and software from unauthorized user access.

SCSI Subsystem

Your computer's SCSI controller can burst 32-bit data transfers through the EISA bus at up to 33MB per second. Its two SCSI channels (buses) provide support for up to 14 differential pair or single-ended SCSI devices (seven on each channel). You can easily configure the SCSI controller, BIOS, SCSI IDs, and other attributes for both channels using the EISA Configuration utility. In addition, your system comes with SCSI software and drivers for DOS, Microsoft® Windows,TM OS/2,[®] Novell® NetWare,[®] Windows NT, and SCO UNIX.

Software

Included with your system is a System Configuration diskette containing the EISA Configuration utility and various EISA System Utilities. These programs allow you to configure your computer, SCSI subsystem, and EISA option cards, as well as customize many other system features.

In addition, a SETUP program is provided in your system BIOS so you can easily configure your computer if you have not installed any EISA option cards, are not using the SCSI subsystem, or are operating your system without a diskette drive.

Also included are two Video Driver diskettes containing installation programs and video drivers and utilities for Windows 3.1 and many popular MS-DOS® applications.

The three SCSI driver diskettes contain SCSI software and device drivers for various versions of DOS, Windows, OS/2, NetWare, Windows NT, and UNIX. See Chapter 4 of this manual and the X-Series *SCSI Software Users Guide for the AIC-7770* for instructions on installing and using the SCSI software.

Features of This Manual

This manual explains how to set up, configure, and operate your computer, as well as how to install optional equipment. It does not cover your operating system; see your operating system manual for instructions on installing and using it.

Although you should be sure to follow the steps in Chapters 1, 2, and 3 to set up and configure your system, you do not need to read everything in this book. See the following chapter summaries to find the sections you need.

Chapter 1 provides instructions for setting up your system.

Chapter 2 describes how to run the SETUP program to configure your computer when you do not have a diskette drive or did not install any EISA option cards.

Chapter 3 describes how to run the EISA Configuration utility to configure your computer when you have installed EISA option cards.

Chapter 4 provides instructions for certain operating procedures, such as locking the computer's cover, using the password features, and changing the operating speed.

Chapter 5 describes how to remove and replace the system covers and the front panel to access the internal components.

Chapter 6 describes how to install and remove options.

Chapter 7 describes how to install and remove disk drives.

Appendix A contains troubleshooting tips.

Appendix B gives the technical specifications for the computer.

At the end of the manual, you'll find a **Glossary**, an **Index**, and a list of EPSON U.S. and international marketing locations.

Where to Get Help

EPSON provides customer support and service through a network of Authorized EPSON Servicers. If you need technical assistance with the installation, configuration, and operation of your EPSON product, contact your EPSON dealer or Authorized EPSON Servicer.

You can also contact the EPSON marketing location nearest you for customer support and service. International marketing locations are listed at the end of this manual.

When you call for technical assistance, be ready to identify your system and its configuration, and provide any error messages to the support staff. See Appendix A for more information.

If you need help with any software application program you are using, see the documentation that came with that program for technical support information.

CompuServe On-line Support

If you have a modem, the fastest way to access helpful tips, specifications, drivers, application notes, tables for DIP switch or jumper settings, and bulletins for EPSON products is through the Epson America Forum on CompuServe.®

If you are not currently a member of CompuServe, you are eligible for a free introductory membership as an owner of an EPSON product. This membership entitles you to:

- ☐ An introductory \$15 credit on CompuServe
- ☐ Your own user ID and password
- ☐ A complimentary subscription to *CompuServe Magazine*, CompuServe's monthly publication.

To take advantage of this offer, call the following U.S. telephone number: (614) 529-1611 or your local CompuServe access number.

If you are already a CompuServe member, simply type **GO EPSON** at the menu prompt to reach the Epson America Forum.

Chapter 1

Setting Up Your System

This chapter describes how to set up and start using your computer system for the first time. Before you set up your system, be sure to read the “Important Safety Instructions” at the beginning of this manual.

Preparing to Set Up Your System

It is important to choose a safe, convenient location for your system that provides the following:

- ☐ A flat, hard surface. Place the computer on an anti-static mat if the surface is carpeted.
- ☐ Good air circulation. Leave several inches of space around the computer so air can move freely for proper cooling.
- ☐ Moderate environmental conditions. Select a cool, dry, area and protect your computer from humidity, dust, and smoke. Avoid direct sunlight and other heat sources.
- ☐ No electromagnetic interference. Do not place your system too close to any device that generates an electromagnetic field or creates electrical noise, such as a telephone, air conditioner, large fan, radio, TV, or large electric motor.
- ☐ Access to appropriate power sources. Connect all your equipment to an appropriate source. (See “Setting the Voltage Selector Switch” on page 1-4 for information about setting the correct voltage.)

If the power cord supplied with your system is not compatible with the AC wall outlet in your region, obtain a suitable power cord that meets the following criteria:

- ☐ The power cord must be rated for at least 125% of the current rating of the AC voltage system. For more information, see Appendix B.
- ☐ The power cord connector that plugs into the wall outlet must be an appropriately grounded male plug.
- ☐ The power cord connector that plugs into your system must be an IEC type CEE-22 female connector.
- ☐ The power cord must be a flexible <HAR> (harmonized) cord that is less than 14.76 feet (4.5 meters) long to comply with the system's safety requirements.

Caution

Do not use or attempt to modify the supplied AC power cord if it is not the type required for use in your region.

Installation Overview

The following steps offer an overview of the system installation process and tell you where to look for detailed instructions.

1. Set the voltage selector switch on the back of the computer to the correct input line voltage. (See page 1-4.)

Caution

To avoid permanent damage to the computer, be sure the voltage selector switch is set to the correct input line voltage *before you turn on the power*.

2. The keys for the front panel door lock are taped to the inside of the door. Open the door to remove the keys. (It might be a little hard to open the door the first time.)
3. Install any optional equipment you want to add to your computer, such as disk drives, memory modules, or EISA option cards. You may not want to install any ISA option cards yet (unless you will use an ISA card to control your monitor). See “Installing Optional Equipment,” on page 1-5.
4. Connect the external devices, such as the monitor, printer, keyboard, and mouse. See “Connecting Peripheral Devices,” on page 1-6.

Note

Even if you intend to use this system as a network file server, you need to connect at least a monitor and a keyboard to complete the installation. You may remove them once the installation is complete.

5. Read “Turning On the System” on page 1-8, before you turn on the computer.
6. Read “Configuring Your System” on page 1-10 for information on the available configuration programs
7. If necessary, set the switches or jumpers on any ISA cards you have not yet installed, and install them in the computer. See Chapter 6 for instructions.
8. Connect all of your peripheral devices
9. Install your operating system and any other application programs.

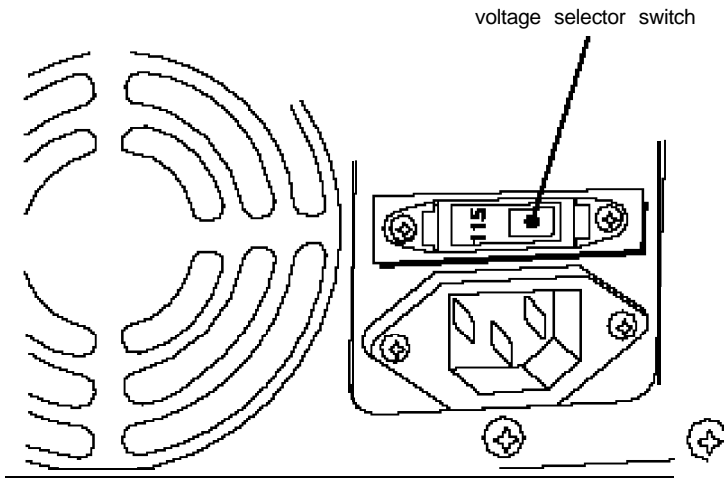
Setting the Voltage Selector Switch

Your system is powered by a 230 watt power supply. The power supply voltage is controlled by a voltage selector switch on the computer's back panel that may be set to 115 VAC or 230 VAC.

The computer is shipped with the voltage selector switch set to 115 VAC. This setting is appropriate for line source voltages between 100 and 120 VAC. This is generally the appropriate setting if you will use the computer in North America or Japan.

If you plan to operate the computer in the United Kingdom or Europe, you will almost certainly need to reset the voltage selector switch to 230 VAC. Line source voltages between 200 and 240 VAC are acceptable with the switch set to 230 VAC.

If you need to change the voltage selector switch setting, refer to the illustration below.



Caution

Before you turn on the power to your system, you must be sure the voltage selector switch is set to the appropriate setting for the electrical power source in your location or you will seriously damage your system.

To change the voltage selector switch setting, insert the tip of a ball-point pen or a similar tool into the dimple on the switch. Then slide the switch to the right to select 115 VAC or to the left to select 230 VAC.

Installing Optional Equipment

Before you set up and connect your system components, you may want to install any optional equipment you plan to use. Chapters 6 and 7 give complete instructions for installing options such as disk drives, memory modules, and option cards.

Note

You may want to list the serial numbers and other important information about the options you install in the “Equipment Log” on page 1-11.

Note that the order in which you install option cards depends on the type of cards you have. If you will be installing only ISA option cards that did not come with their own configuration (CFG) files, you should install the cards before you connect your peripheral devices. Follow the instructions in your ISA card manual to set the card’s switches or jumpers for your system.

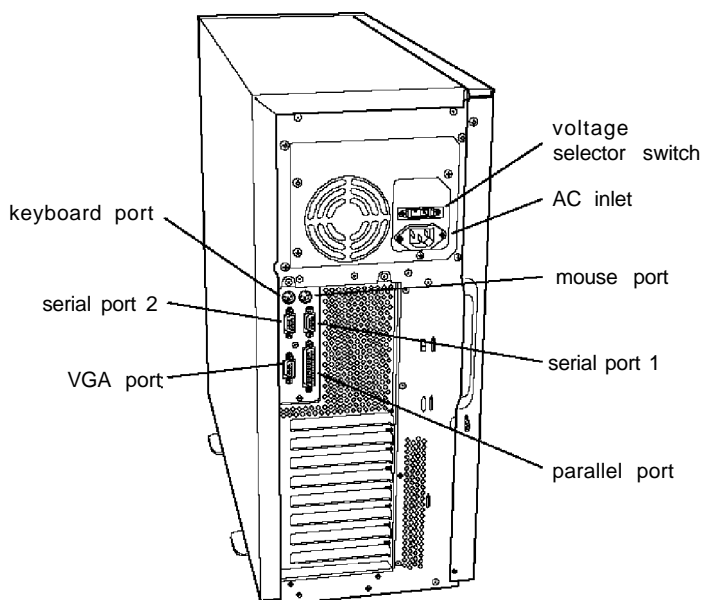
You should also install any EISA cards before you connect peripheral devices so your EISA Configuration utility can automatically detect the cards and configure them correctly.

If you plan to install any ISA cards that came with their own CFG files, you should install the cards after you have connected the necessary peripheral devices and run the computer's EISA Configuration utility. This allows you to add the CFG file information to your configuration so the program can give you the card's correct jumper and switch settings. Then you can set the switches and jumpers and install the card. See the documentation that came with your card(s) for information.

Be sure that the option card(s) you install do not exceed your computer's power supply limits, as described in Appendix B. Then follow the instructions in Chapter 6 to install the cards.

Connecting Peripheral Devices

Refer to the illustration below to locate the ports on the back of your computer.



Before connecting the peripheral devices, make sure the power buttons or switches on the computer and all peripheral devices are turned off. Then follow these steps to connect the peripheral devices:

1. If necessary, insert the mouse cable connector into the mouse port on the back panel.

Caution

Although the keyboard and mouse ports appear to be identical, you cannot use them interchangeably. Be sure to plug the keyboard and mouse into the correct ports.

2. Insert the keyboard cable connector into the keyboard port on the back panel.
3. Connect the interface cables of any other peripheral devices such as a monitor, printer, or modem to the appropriate ports on the back panel.
4. Connect the power cords for any peripheral devices to grounded electrical outlets.
5. Plug one end of the computer's power cord into the AC inlet on the back panel.
6. Plug the other end of the computer's power cord into an appropriate electrical outlet.

Be sure to read the next section before you turn on the system.

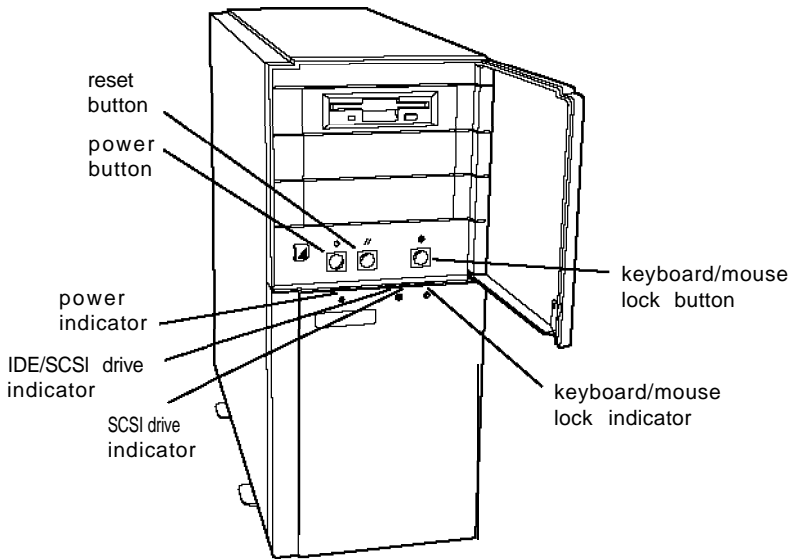
Turning On the System

Read the following safety rules to avoid damaging the computer or injuring yourself

- ☐ Do not connect any power or peripheral device cables when the computer's power is on.
- ☐ Never turn on the computer while a protective card is in a 5.25-inch diskette drive.
- ☐ Never turn on the computer when its cover is off.
- ☐ Never turn off or reset your computer while a disk drive light is on. This can destroy data stored on the disk.
- ☐ Always wait at least five seconds after you turn off the power before you turn it on again. This prevents possible damage to the computer's electrical circuitry.
- ☐ Do not leave a beverage near your system or any of its components. Spilled liquid can damage the circuitry of your equipment.
- ☐ Always turn off the power and wait 30 seconds before you disconnect the computer's power cord and device cables, and remove the cover. Only remove the cover to access internal devices.
- ☐ Never press the computer's power, reset, or keyboard/mouse lock buttons while the front panel is off.

Follow these steps to turn on the system:

1. Make sure all peripheral devices, such as the mouse, keyboard, and monitor, have been connected.
2. Turn on the monitor and any other peripheral devices.
3. Turn on your system by pressing the power button on the front panel.



4. Verify that the power indicator light on the front panel is on.

You are now ready to begin using your computer. See the next section for information on configuring your system.

Configuring Your System

There are two programs you can use to configure your computer: the SETUP program and the EISA Configuration utility. Which one you use depends on the option cards you may have installed in your computer.

You use the SETUP program to configure your computer only in the following situations:

- ☐ You did not install any option cards or installed only ISA option cards that did not come with configuration (CFG) files
- ☐ You are not going to use the built-in SCSI subsystem
- ☐ You do not have a diskette drive or have disabled your diskette drive.

In all other cases, run the EISA Configuration utility to configure your system.

Your computer's SETUP program is stored in the system BIOS ROM. You can run SETUP whenever you turn on or reset the computer, regardless of whether you have installed an operating system. See Chapter 2 for instructions on running the program.

The EISA Configuration utility is on the System Configuration diskette. See Chapter 3 for instructions on running this utility.

Equipment Log

Use this space to record information about your system. You can refer to this section if you call for assistance.

Computer serial number: _____

Purchase location: _____

date: _____

Monitor serial number: _____

Printer serial number: _____

Other device serial number: _____

Other device serial number: _____

Other device serial number: _____

Other device serial number: _____

Option cards installed:

Slot 1: _____

Slot 2: _____

Slot 3: _____

Slot 4: _____

Slot 5: _____

Slot 6: _____

Slot 7: _____

Slot 8: _____

IDE drives installed:

Bay 1: _____

Bay 2: _____

SCSI drives installed:

Bay 1: _____

Bay 2: _____

Bay 3: _____

Bay 4: _____

Bay 5: _____

Bay 6: _____

Other drives installed (diskette, tape, CD-ROM, etc.):

Bay 1: _____

Bay 2: _____

Bay 3: _____

Operating system version number: _____

Operating system serial number: _____

Software program	Version number	Serial number
------------------	----------------	---------------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

Chapter 2

Running the *SETUP* Program

The *SETUP* program allows you to configure your computer and set many different system options. Use *SETUP* to configure your computer only in the following situations:

- ☐ You did not install any option cards or installed only ISA option cards that did not come with configuration (CFG) files
- ☐ You are not going to use the built-in SCSI subsystem
- ☐ You do not have a diskette drive or have disabled your diskette drive.

In all other cases, use the EISA Configuration utility instead of the *SETUP* program to configure your system. See Chapter 3 for instructions on running the EISA Configuration utility.

Note

If you plan to operate your computer without a monitor, keyboard, or diskette drive, see “Using Special Configurations” in Chapter 4 before running *SETUP* or the EISA Configuration utility. If you’ll be redirecting your computer’s input and output to a serial port, be sure to see “Operating Your Computer from a Remote Location” in Chapter 4 before configuring your system.

Your computer's SETUP program is stored in the system BIOS ROM. You can run SETUP whenever you turn on or reset the computer, regardless of whether you have installed an operating system.

Note

Any settings you make using the EISA Configuration utility override those you set using SETUP.

Starting the Program

Follow these steps to run SETUP:

1. Turn on the computer or press the reset button. You see the memory counts for the memory test and then the power-on diagnostic tests. You may also see this prompt:

Press Spacebar to Abort Memory Test

If you want to skip the memory test to shorten the time it takes to enter SETUP, press the spacebar.

(If you press **Ctrl Alt Del** to reset the computer, it does not perform the memory test.)

2. If the power-on diagnostic tests do not find errors, you hear a tone code and may see the following prompt:

To continue press: SPACEBAR
To configure system press: . . . F1

The prompt remains on the screen for four seconds.
Press **F1** to run SETUP.

Note

If you ran SETUP previously and disabled the memory test prompt or the SETUP prompt, you will not see these messages. However, you can still press the spacebar to skip the memory test or press **F1** to start SETUP.

If the tests find a minor error or you have not yet installed your operating system, the computer beeps twice; then you see an error message and the following prompt:

```
To continue press: . . . . . SPACEBAR  
To configure system press: . . . F1
```

To continue without running SETUP, press the spacebar.
To run SETUP, press **F1**.

If the power-on diagnostic tests find a serious error, you hear a tone code indicating the error and the system halts. See Appendix A for a list of the error tone codes and suggested solutions to the problem.

3. First you see an information screen that tells you when you need to run SETUP instead of the EISA Configuration utility. Press **F1** to continue.
4. Now you see the first of four pages of SETUP information. Follow the instructions in the next section to view or change your settings.

Selecting Options

Use the keys listed in the table below to select SETUP program options.

Setup key functions

key	Function
Page Down or Page Up	Display the next or previous page of SETUP information
→ ← ↓ ↑	Move the cursor from the current option to the next or previous available option
+ or -	Change the setting of the currently highlighted option; if the setting is a numeric value, + selects higher value and - selects lower values
Esc	Displays the SETUP exit screen containing information about the keys you can press to set default settings, exit SETUP without saving settings, or save settings and exit
F5	Sets all SETUP options to their default settings, except for the system time and date

Selecting Settings

The table below lists the settings available for each SETUP option and describes how they affect your configuration. The numbers in parentheses refer to notes at the end of the table. When you finish changing your settings, see “Exiting SETUP” on page 2-16.

SETUP program options

Option	Settings	Description
Time	hh:mm:ss	Set the current hour(hh), minutes(mm), and seconds(ss); seconds can only be reset to 0

SETUP program options (continued)

Option	Settings	Description
Date	<i>dd month yyyy</i>	Set the current day (<i>dd</i>), month, and year (<i>yyyy</i>); automatically tracks leap years
Onboard Floppy	Enabled* Disabled	Set to Enabled to use the built-in diskette drive controller; set to Disabled to disable the built-in controller if you are either not using a diskette drive or will use a controller on an option card
Diskette A Diskette B	5.25", 360 KB 5.25", 1.2 MB 3.5", 720 KB 3.5", 1.44 MB (A*) 3.5", 2.88 MB Not Installed (B*)	Set to the type(s) of diskette drive(s) installed in the system; set to Not Installed if you do not have the specified drive installed
Onboard IDE	Enabled Disabled*	Set to Enabled to use the built-in IDE hard disk drive controller to control your IDE drive(s); set to Disabled to use the IDE interrupt (IRQ14) for an option card or if you install an external IDE drive controller (1)
Hard Drive 1 Hard Drive 2	Type <i>nn</i> Not Installed*	Set to the hard disk drive type of the specified IDE hard disk drive or enter parameters for user-definable drive type according to the drive's documentation; select the user-defined drive type number you want to use in User Definable Drives option, described below; select Not Installed for both options if you have installed a SCSI hard disk drive. (For more information, see "Hard Disk Drive Types" on page 2-13.)

SETUP program options (continued)

Option	Settings	Description
Onboard SCSI	Disabled* H/W/ Only Enabled	Select Disabled if you are not using the built-in SCSI controller to free up interrupt IRQ11; select H/W Only if you will not boot your system from a SCSI device connected to the built-in SCSI controller; select Enabled if you will boot from a SCSI device connected to the built-in SCSI controller (2)
SCSI BIOS Mapping	C0000H* C8000H EC000H	If you enabled the Onboard SCSI option, you must ensure that the SCSI BIOS location does not conflict with the onboard video BIOS location; set this option to a different starting address than the Onboard Video BIOS Mapping option address, described on page 2-12
User Definable Drives	2 and 3* 48 and 49	Select the pair of user-definable drive types you want to use to enter your drive's parameters; select the type and enter the parameters using the Hard Drive option described above; note that you configure drives 2 and 3 using the EISA Configuration utility only
Video Type	VGA/EGA* CGA40 CGA80 MDA Not Installed	Select the type of adapter you installed; if you are using the built-in adapter, select VGA/EGA (3)
640 x 480 Mode Refresh Rate (4)	60 Hz* 75 Hz x2, x16 @ 72 Hz (72 Hz in 2 and 16 color modes only)	Select the refresh rate (frequency in Hertz) of the built-in video controller when it is operating in 640 x 480 mode; see your monitor manual to determine the refresh rate your monitor is capable of displaying

SETUP program options (continued)

Option	Settings	Description
800 x 600 Mode Refresh Rate	56 Hz* 60 Hz 72 Hz	Select the refresh rate frequency (in Hertz) of the built-in video controller when it is operating in 800 x 600 mode; see your monitor manual to determine the refresh rate your monitor is capable of displaying
1024 x 768 Mode Refresh Rate	Interlaced @ 44/88 Hz Non-Interlaced @ 60 Hz Non-Interlaced @ 70 Hz Non-Interlaced @ 72 Hz	Select the refresh rate frequency (in Hertz) of the built-in video controller when it is operating in 1024 x 768 mode; see your monitor manual to determine the correct refresh rate your monitor is capable of displaying
Video Font	8 x 16 9 x 16*	Select the font dimensions of the video characters that appear on the screen; select 9 x 16 for use with VGA and most programs
OnBoard Video Controller	Primary* Secondary	Set to Primary if you are using the built-in video controller as your primary display adapter; set to Secondary to use the built-in controller as the secondary controller; if you install a VGA display adapter card, the computer may automatically change the card to the primary adapter and set the built-in adapter to Secondary; all BIOS video writes are directed to the primary video display
Offboard VGA/EGA Adapter Installed	Yes* No	Set to Yes if you installed a video display adapter on an option card that contains a BIOS at address C0000h; select No if you have not installed a video option card (5)

SETUP program options (continued)

Option	Settings	Description
Keyboard	Installed Not Installed*	Set to Installed to allow your computer to operate with a keyboard; set to Not Installed to use your computer without a keyboard (for example, as a network server) and allow power-on diagnostic tests to report a disabled keyboard instead of a failed keyboard
Numlock on at boot	Yes No*	Set to Yes to turn on Num Lock mode whenever you turn on or reset your computer; set to No to turn it off
Password	Not installed* Installed	To set a power-on password, highlight this option when the setting is Not installed and press +or-. Then follow the instructions on the screen to enter the password; the setting changes to Installed. (See Chapter 4 for more information about the password function.)
Keyboard security hot key (CTRL-ALT)	Disabled*	This option has no effect on your system
POST Memory Test Prompt	Enabled* Disabled	Set to Enabled to display the skip memory test prompt when you turn on or reset your computer; select Disabled to prevent display of the prompt. (You can still press the space bar to skip the test if you disabled the prompt.) See page 2-2 for more information.

SETUP program options (continued)

Option	Settings	Description
POST Setup Prompt	Enabled* Disabled	Set to Enabled to display the prompt to run the SETUP program when you turn on or reset your computer; select Disabled to prevent display of the prompt. (You can still press F1 to run SETUP if you disable the prompt.) See page 2-2 for more information.
Boot Device	Diskette or Hard Drive * Hard Drive Only	Select the device(s) from which you want to be able to boot your system; the setting is ignored if the diskette drive is controlled by a controller on an option card
Base Memory	640 KB* 512 KB	Displays the size of the base memory; setting is 640 KB unless there is a base memory failure or you reassigned the base memory between 512 KB and 640 KB in the Base Memory option described below
Extended Memory	[memory size]	Displays the amount of extended memory above 1MB, including memory installed on SIMMs and any memory option cards you cannot change this setting
Base Memory Above 512K	Enabled* Disabled	Set to Enabled to assign the base memory address from 512 KB to 640 KB to memory on the system board; set to Disabled if you install an option card that reserves these addresses for its own use
Speaker	Enabled* Disabled	Set to Enabled to turn on the computer's built-in speaker; set to Disabled to turn off the speaker (cannot be turned on by application software if Disabled)

SETUP program options (continued)

Option	Settings	Description
LCD	Enabled* Disabled	Set this option to Disabled; your system does not have an LCD screen
Onboard Mouse	Enabled* Disabled	Set to Enabled if you have connected a mouse to the built-in mouse port; set to Disabled if you are not using a mouse (free hardware interrupt IRQ12) or if you are using a mouse controller installed on an option card
Parallel Port	Address 378H: Compatible / IRQ7* Address 278H: Compatible / IRQ7 Address 378H: Bidirectional / IRQ7 Address 278H: Bidirectional / IRQ7 Disabled	Select one of the Compatible options to set the port for IBM AT compatible signals; select one of the Bidirectional options to set the port for IBM PS/2 compatible bidirectional signals; address 378H is for LPT1 and 278H is for LPT2; select Disabled to prevent the port from reacting to any signals (no resources are allocated when Disabled)
Serial Port 1 (6)	Address 3F8H/IRQ4* Address 2F8H/IRQ3 Address 3E8H/IRQ10 Disabled	Select the address you want to use for serial port 1; address 3F8H is for COM1, 2F8H is for COM2, and 3E8H is for COM3; set to Disabled to prevent the port from reacting to any signals (no resources are allocated when Disabled)
Serial Port 2 (6)	Address 2F8H/IRQ3* Address 3E8H/IRQ10 Address 2E8H/IRQ11 Disabled	Select the address you want to use for serial port 2; address 2F8H is for COM2, 3E8H is for COM3, and 2E8H is for COM4; set to Disabled to prevent the port from reacting to any signals (no resources are allocated when Disabled)

SETUP program options (continued)

Option	Settings	Description
Console Redirection to COM1	Disabled* 1200 Baud 2400 Baud 9600 Baud	Set to Disabled to prevent redirection of the computer's input and output to serial port 1; set to the speed the computer should use to copy the redirected input/output to serial port 1
Console Redirection to COM2	Disabled* 1200 Baud 2400 Baud 9600 Baud	Set to Disabled to prevent redirection of the computer's input and output to the serial port assigned as COM2; set to the speed the computershould use to copy the redirected input/output to the port
CPU Speed	Fast* Slow	Select Fast to set the computer's processor to operate at its maximum speed; select Slow to set the processor to operate at a simulated 8 MHz speed to accommodate old application programsthat may require it; slow speed also disablesany system caching
Cache	Write Through Write Back Disabled*	Set to Write Through to enable internal and external caching on the 486DX2/66 CPU card; set to Write Back to enable internal and external caching on any of the single-or dual-Pentium CPU cards set to Disabled to prevent caching when you are using time-dependent software
I/O Recovery Time	Standard Enhanced*	Select Enhanced to set a fast I/O recovery time; set to Standard if you have trouble with an application program or option card that is running in enhanced mode

SETUP program options (continued)

Option	Settings	Description
Posted I/O Writes (7)	Standard* Fast Disabled	Set to Standard to improve performance by posting memory and I/O writes to the EISA bus set to Disabled if any of your option cards do not support this feature
Concurrent Refresh	Enabled* Disabled	Set to Enabled to improve performance by executing concurrent CPU cache and main memory refresh cycles; set to Disabled if you have trouble with any application programs while this option is enabled
Onboard Video BIOS Mapping	To E0000H* To C0000H	Select To E0000H to map the onboard video BIOS to memory address E0000h; select To C0000H to map the video BIOS to address C0000h to provide compatibility with old application software (8)
Shadow C0000 to C7FFF C8000 to CFFFF E0000 to E7FFF	Disabled* Enabled	Set any of these options to enable or disable shadowing of ROM data from the indicated memory address range (8)
Scan FLASH User Area	Enabled Disabled*	Set to Enabled to allow the BIOS to call any code you have installed in the 8KB block EA000h to EBFFFh prior to booting the computer (FLASH user area); set to Disabled to scan the block normally
Multiprocessor APIC	Enabled Disabled*	Set to Enabled if you installed the dual-Pentium CPU card; set to Disabled for any single processor CPU card

* Default setting

- 1 If you will boot your system from a SCSI hard disk drive, you must disable the built-in IDE controller and set both hard disk drive types to Not Installed.

- 2 You must also run the EISA Configuration utility to fully enable your built-in SCSI controller.
- 3 When you select Not Installed for the Video Type option, the display type bits are configured for VGA.
- 4 If you change the refresh rate, you must press the reset button or turn the computer off and then on again after saving your settings to reset the rate.
- 5 The Offboard VGA/EGA Adapter Installed option settings do not affect your built-in video controller. To enable or disable this controller, you must set jumper E0290. See Chapter 6 for more information.
- 6 You cannot set Serial Port 1 and 2 to the same address. If you attempt to do so, you see an error message.
- 7 The following I/O address ranges are never posted: 0000h to 00FFh, 0400h to 04FFh, 0800h to 08FFh, and 0C00h to 0CFFh.
- 8 If you set the Onboard Video BIOS Mapping option to To C0000H, you must set the Shadow C0000 to C7FFF option to Disabled to avoid a memory conflict. If you set the Onboard Video BIOS Mapping option to To E0000H, you must set the Shadow E0000 to E7FFF option to Disabled to avoid a conflict. You must also set the SCSI BIOS Mapping option so that the SCSI BIOS does not conflict with any of these addresses.

Hard Disk Drive Types

The following table lists the types of IDE hard disk drives you can use in your computer. Check this table and the manual that came with your hard disk to find the correct type for the hard disk drive(s) installed in your computer.

If the documentation for your hard disk drive includes only the drive parameters and not a specific type number, search through this list to find a type that matches your drive. If none of the types match, select the user-defined drive types, 48 and 49, and set your own parameters using the Hard Drive *n* option. See page 2-5. (You can configure user-defined drive types 2 and 3 with the EISA Configuration utility only.)

Note

Be sure you enter the correct drive type or parameters for your drive; if they are incorrect, the computer will not recognize your drive.

Hard disk drive types

Type	Cyl	Hd	Pre	LZ	Sect	Size
01	610	4	-1	686	17	20MB
02, 03	—	—	—	—	—	User-definable *
04	940	8	512	940	17	62MB
05	940	6	512	940	17	46MB
06	820	10	-1	0	17	68MB
07	918	15	-1	0	17	114MB
08	762	8	0	762	39	116MB
09	900	15	-1	901	17	112MB
10	977	5	0	978	17	40MB
11	855	5	-1	855	17	35MB
12	855	7	-1	855	17	49MB
13	978	14	-1	978	35	233MB
14	733	7	-1	733	17	42MB
16	615	4	-1	0	17	20MB
17	—	—	—	—	—	Unused
18	977	7	-1	977	17	56MB
19	1024	7	512	1023	17	59MB
20	814	9	-1	814	32	114MB
21	968	10	-1	968	34	160MB
22	873	13	-1	873	36	199MB
23	636	16	-1	637	63	313MB

* User-definable using EISA Configuration utility only

Hard disk drive types (continued)

Type	Cyl	Hd	Pre	LZ	Sect	Size
24	830	10	-1	830	26	105MB
25	751	8	-1	1	17	49MB
26	755	16	-1	1	17	100MB
27	1024	5	-1	1023	17	42MB
28	1024	8	-1	1023	17	68MB
29	584	16	-1	584	32	146MB
30	311	16	-1	312	63	153MB
31	989	5	0	989	17	41MB
32	—	—	—	—	—	Unused
33	965	5	-1	1	17	40MB
34	965	10	-1	1	17	80MB
35	1024	9	-1	1024	17	76MB
36	—	—	—	—	—	Unused
37	830	10	-1	830	17	68MB
38	832	6	-1	832	33	80MB
39	776	8	-1	776	33	100MB
40	615	8	128	664	17	40MB
41	917	15	-1	918	17	114MB
42	1023	15	-1	1024	17	127MB
43	—	—	—	—	—	Unused
44	820	6	-1	820	17	40MB
45	—	—	—	—	—	Unused
46	925	9	-1	925	17	69MB
47	699	7	256	700	17	40MB
48, 49	—	—	—	—	—	User-definable

Exiting SETUP

To exit the SETUP program, press **ESC** at any of the SETUP pages and follow the instructions on the screen to do any of the following:

- ☐ To continue running SETUP, press **ESC** again.
- ☐ To save your settings and then exit and reboot the computer, press **F4**.
- ☐ To load default settings for all the SETUP options, press **F5**; the program erases any changes you have made (except for the time and date).
- ☐ To exit SETUP without saving your settings, press **F6**.

Note

If you changed the video refresh rate, you must press the reset button or turn the computer off and then on again after saving your settings to reset the rate.

Chapter 3

Running the EISA Configuration Utility

The EISA Configuration utility provided with your system allows you to configure your computer when you have done or will do the following:

- ☐ Installed EISA option cards
- ☐ Installed ISA option cards that came with configuration files
- ☐ Plan to use the built-in SCSI controller.

You can use the EISA Configuration utility to do the following:

- ☐ Learn about the configuration process
- ☐ Set the date and time
- ☐ Copy the configuration files for any option cards you install
- ☐ Configure the system board and any option cards
- ☐ Create one or more System Configuration Information (SCI) files
- ☐ Access other system utilities, such as password, CPU speed, and cache utilities.

Note

If you plan to operate your computer without a monitor, keyboard, or diskette drive, see “Using Special Configurations” in Chapter 4 before running the EISA Configuration utility. If you’ll be redirecting your computer’s input and output to a serial port, be sure to see “Operating Your Computer from a Remote Location” in Chapter 4 before configuring your system.

You need to run the EISA Configuration utility to configure your system with your EISA option cards installed before you use your computer. You may need to run it again later if you add or remove options, such as memory, disk drives, or option cards.

After running the utility, you save the current configuration in the computer's CMOS RAM and in a file called SYSTEM.SCI. Your computer checks this information each time you turn it on and assigns system resources based on the configuration options you selected.

Once you configure your computer with this utility, you should not use the SETUP program in your computer's BIOS. Always use the EISA Configuration utility to configure your computer.

If you want to create an alternate configuration for your computer or another computer, you can create an alternate SCI file. See page 3-29 for more information.

Note

The first time you configure your computer, you must run the program from the System Configuration diskette and it is best to always run it from there. However, you can run the EISA Configuration utility from your hard disk to speed up its performance. See page 3-36 for information on copying the files to your hard disk. Then see page 3-31 for instructions on running the utility from a command line.

How to Use This Chapter

This chapter is divided into the following four sections:

- ❑ **The Configuration Process** describes the various aspects of configuring your computer with the EISA Configuration utility. It also tells you how to use the keyboard or a mouse with the program and how to use on-line help.
- ❑ **Configuring Your System** provides step-by-step instructions for running the EISA Configuration utility and is organized in the order in which you should perform the operations.
- ❑ **Using Alternate Configuration Files** explains how to create and use alternate configuration files, if this is necessary.
- ❑ **Using Special Modes** tells you how to configure your computer by running it in special operating modes, such as non-target modeling mode.

Read “The Configuration Process” first to familiarize yourself with all aspects of the configuration process. Then perform the configuration operations in the order they are described under “Configuring Your System.”

If you need to create alternate configuration files or run the program in special modes, see pages 3-29 or 3-31, respectively.

The Configuration Process

This section describes the following configuration operations:

- ☐ Using the configuration files
- ☐ Using the keyboard or a mouse with the program
- ☐ Using on-line help

Using Configuration Files

Configuration (or CFG) files provide information to the system about a card's functions and resource requirements so your computer can allocate its resources efficiently. They also provide instructions for setting any switches and jumpers on ISA cards.

You can copy a configuration file for each card you install to your System Configuration diskette using the EISA Configuration utility. EISA cards come with the necessary CFG file to allow the program to configure the card automatically. See your EISA card documentation for more information.

ISA option cards may come with the necessary CFG file for this program. If you do not have a CFG file for your ISA card, you can still install the card in your system. However, you should configure the rest of your system and then follow the instructions that came with the card to set any of its switches or jumpers.

Using the Keyboard

If you use a keyboard when you run the EISA Configuration utility, refer to the table below for a description of the keys you can use to move the cursor and select items. If you'll be using a mouse with the program, see "Using a Mouse" below. Most of the screens show which keys you can press to perform various operations. Follow the instructions on each screen.

Whenever the <OK> icon is highlighted, press **Enter** to select <OK>. To select <Cancel>, you can either press the Esc key or highlight <Cancel> and press **Enter**.

Key commands

Key	Function
Tab or ↓	Moves the cursor to the next field
Shift Tab or ↑	Moves the cursor to the previous field
↑ or ↓	Highlights items within a list or scrolls the screen
Enter	Selects the highlighted option
Esc	Cancels the current action or menu
Page Up or Page Down	Moves the cursor up or down one screen
Ctrl Home	Moves the cursor to the first line of information
Ctrl End	Moves the cursor to the last line of information

Using a Mouse

The first time you run the EISA Configuration utility, you must use the keyboard. After configuring your system, load your operating system and then install your mouse driver. Then you can run the utility using your mouse.

To select most options, place the cursor on the option, click once to highlight it, and again to select it.

When you see ↑ or ↓ on the side of a screen, you can scroll the text. Place the cursor on the arrow indicating the scroll direction and hold down the mouse button. Release it to stop.

Keep in mind that this chapter gives keyboard instructions when describing how to use the EISA Configuration utility. You should substitute the appropriate mouse equivalents when performing the same operations.

Using On-line Help

The EISA Configuration utility provides extensive on-line help information. You can obtain help in the following ways:

- ☐ Highlight a menu option to see a description of its function.
- ☐ Select Step 1: Important EISA configuration information for detailed information about each step in the configuration process.
- ☐ Press the **F1** key whenever you see Help=F1. The following menu appears:

EISA Configuration Help

Current screen

Selected item or board

All boards

Keys

Topics

Using help

EISA configuration

Press ↓ to highlight the help information you need; then press **Enter** to select it.

Configuring Your System

Follow the instructions in this section and on your screen to configure your computer using the EISA Configuration utility. Configure your system in the following order:

- ☐ Set the date and time
- ☐ When you add an option card, select the Add or remove boards option to copy the necessary configuration files
- ☐ Use the view or edit the details of your configuration option to define your configuration
- ☐ View or print your jumper and switch settings
- ☐ Save the configuration as you exit the program.

Starting the Program

Follow these steps to start the EISA Configuration utility:

1. Insert the System Configuration diskette in drive A and turn on or reset the computer.
2. After a moment, you see the title screen for the EISA Configuration utility. Press **Enter** to continue. You see the Welcome screen.

Note

If you installed any EISA option cards in your system, you see a message telling you to configure your computer. Press **Enter** to continue.

3. Press **Enter**. You see the Main Menu:

Main Menu

```
Learn about configuring your computer
Configure computer
Set date
Set time
Access System Utilities
Maintain system configuration diskette
Exit from this utility
```

4. For an overview of the configuration process, highlight **Learn about configuring your computer** and press **Enter**. When you have finished reading the three Help screens, press **Enter** to return to the Main Menu. (You can press **F10** to return to the Main Menu at any time.)

Now set the date and time of your computer's real-time clock, as described below.

Setting the Date and Time

The real-time clock in your computer continuously tracks the date and time—even when the computer is turned off. The first time you run the configuration program, set the date and time for your computer. You can set them again later to adjust your clock for seasonal time adjustments, such as daylight savings time. The computer automatically changes the date for leap years.

Follow these steps to set the date and time:

1. At the Main Menu, select Set date. You see a prompt such as the following:

```
Date 12-12-1994 (mm-dd-yyyy)
```

2. The current setting for Date is highlighted. Correct it as necessary. You can use the arrow keys to move the cursor and overwrite the date. Then press **Enter**.
3. At the Main Menu, select Set time. You see a prompt similar to the date prompt.
4. You can use the arrow keys to move the cursor and overwrite the time. Then press **Enter**. You see the Main Menu.

Now you can configure your computer, as described below.

Performing the Configuration Steps

Follow these steps to configure your computer:

1. At the Main Menu, select Configure computer. After a moment, you see this menu:

```
Steps in configuring your computer
```

```
Step 1: Important EISA  
configuration information
```

```
Step 2: Add or remove boards
```

```
Step 3: View or edit details
```

```
Step 4: Examine required switches
```

```
Step 5: Save and exit
```

Note

If you installed EISA option cards in your system, the program first asks you to insert a diskette containing a CFG file for the EISA card. Remove the System Configuration diskette, insert the appropriate configuration diskette, and press **Enter**. Follow the instructions on the screen to complete the installation and then go to the next step.

2. Select Step 1 and read the information displayed on your screen about configuring your system. If you want to print any of the screens to the printer connected to port LPT1, press the **Print Screen** key.
3. Select Step 2 and follow the instructions on the screen to add, remove, or move option cards in your configuration and copy any necessary CFG files to your System Configuration diskette. See the next section for more information.
4. Select Step 3 and follow the instructions on the screen to view or edit the details of your system board and your option cards. See “Defining the Configuration Settings” below for more information.
5. Select Step 4 if you want to view or print the current configuration and any switch or jumper settings you may need to change. Follow the instructions on the screen.
6. When you finish configuring your system, select Step 5 to save the configuration in your computer’s CMOS RAM and reboot the system. You can also exit the program without saving the configuration, if necessary. Follow the instructions on the screen.

Adding or Removing a Board

Select Step 2: Add or remove boards when you need to add or remove an option card. The program displays a list of the computer's slots with a description of any cards that it detects. The computer automatically detects EISA cards, but you must add the necessary ISA card information. Follow the instructions on the screen to add, move, or remove an option card.

When you add an option card, you need the configuration diskette that came with the card. Follow the instructions on the screen to copy the appropriate CFG files to your System Configuration diskette.

Note

Your computer does not come with a CFG file library diskette. When adding a card, insert the CFG file diskette that came with the card. If you are installing an ISA card that did not come with a diskette, follow the instructions in the card's documentation to set the appropriate jumpers.

Defining the Configuration Settings

Select Step 3: View or edit details from the configuration menu to view your system configuration options. Then follow the instructions on the screen to edit the settings of these options. You can also perform various advanced configuration operations by accessing the Advanced menu. See "Using the Advanced Configuration Options," later in the chapter, for more information.

You cannot change the settings for certain options because they are detected and set automatically by the program. Some options or settings may not be available, depending on the type of microprocessor installed in your computer.

If you add any EISA option cards to your system, various configuration options for the card(s) appear on the screen following the system board options. See your EISA option card documentation for information about configuring your card(s).

The table below describes the settings available for each of the system board options. The numbers in parentheses refer to notes at the end of the table.

System board options

Option	Settings	Description
System Processor Module	[processor type]	Displays the type of processor module installed in yours system
System Board Extended Memory	[memory size] Extended Memory	Displays the amount of extended memory in the system including memory installed on SIMMs and any memory option cards you cannot change this setting
System Base Memory Option	640KB Base Memory* 512KB Base Memory	Select 640KB to use all of this memory as base memory; select 512KB to reassign the memory addresses from 512KB to 640KB if you install an option card that uses these addresses
User Definable Hard Drives	Types 2 and 3* Types 48 and 49	Select the pair of user-definable drive types you want to use; select the type and enter the parametersat the appropriate Hard Drive <i>n</i> option(s) described below

System board options (continued)

Option	Settings	Description
Cache Control	Cache Enabled-Write Through Mode Cache Enabled-Write Back Mode Cache Disabled*	Set to Enabled-Write Through Mode to enable caching on the 486DX2/66 CPU card; set to Enabled-Write Back Mode to enable caching on any of the single or dual-Pentium CPU cards set to Disabled to prevent caching when you are using time-dependent software. You can also turn cache control off and on using the EISA System Utilities; see Chapter 4.
Onboard Floppy Controller	Enabled* Disabled	Set to Enabled to use the built-in diskette drive controller; set to Disabled to disable the built-in controller and use a controller on an option card
Diskette A	35 inch 1.44MB drive* 3.5 inch 720KB drive 3.5 inch 2.88MB drive 5.25 inch 1.2MB drive 5.25 inch 360KB drive Diskette A Disabled	Set to the type of diskette drive installed as drive A in your system; set to Diskette A Disabled if you have removed your diskette drive
Diskette B	3.5 inch 1.44MB drive 3.5 inch 720KB drive 3.5 inch 2.88MB drive 5.25 inch 1.2MB drive 5.25 inch 360KB drive Diskette B Disabled*	Set to the type of diskette drive installed as drive B in your system; set to Diskette B Disabled if you did not install a second diskette drive
Onboard IDE Hard Disk Controller	Enabled Disabled*	Set to Enabled to use the built-in IDE hard disk drive controller to control your IDE drive(s); set to Disabled to use an external IDE drive controller or the built-in SCSI controller (1)

System board options (continued)

Option	Settings	Description
Hard Drive 1 and Hard Drive 2	Drive Type <i>nn</i> Hard Drive <i>n</i> Disabled*	Set to the hard disk drive type of the specified IDE hard disk drive or set to user-definable drive types (2, 3, 48, or 49) and enter parameters according to the drive's documentation; see "Hard Disk Drive Types" on page 3-25 (1)
Parallel Port	Base Address 378h - Compatible* Base Address 378h - Bidirectional Base Address 278h - Compatible Base Address 278h - Bidirectional Disabled	Select one of the Compatible options to set the port for IBM AT compatible signals select one of the Bidirectional options to set the port for IBM PS/2 compatible bidirectional signals; address 378h is for LPT1 and 278h is for LPT2; select Disabled to prevent the port from reacting to any signals (no resources are allocated when Disabled)
Serial Port 1	Base address 03F8h* Base address 02F8h Base address 03E8h Disabled	Select the address you want to use for serial port 1; address 03F8h is for COM1, 02F8h is for COM2, and 03E8h is for COM3; set to Disabled to prevent the port from reacting to any signals (no resources are allocated when Disabled) (2)
Serial Port 2	Base address 02F8h* Base address 03E8h Base address 02E8h Disabled	Select the address you want to use for serial port 2; address 02F8h is for COM2, 03E8h is for COM3, and 02E8h is for COM4; set to Disabled to prevent the port from reacting to any signals (no resources are allocated when Disabled) (2)

System board options (continued)

Option	Settings	Description
COM1 Redirection	Disabled* 1200 Baud 2400 Baud 9600 Baud	Set to Disabled to prevent redirection of the computer's input and output to the serial port assigned to COM1; set to the speed the computer should use to copy the redirected input/output to the serial port assigned to COM1
COM2 Redirection	Disabled* 1200 Baud 2400 Baud 9600 Baud	Set to Disabled to prevent redirection of the computer's input and output to the serial port assigned to COM2; set to the speed the computer should use to copy the redirected input/output to the serial port assigned to COM2
Video Type	VGA/ EGA* CGA -80 columns CGA -40 columns MDA Not Installed	If you have installed a video display adapter on an option card, select the type of adapter you installed; if you are using the built-in video controller, select VGA/EGA
Offboard VGA/ EGA Video Adapter	No -Enable Onboard Video Controller via Jumper* Yes-Disable Onboard Video Controller via Jumper	Set to Yes if you have installed a video display adapter on an option card that contains a BIOS at address C0000h; select No if you have not installed a video option card; make sure jumper E0290 is set to match the setting you select here
Onboard Video Controller	Primary* Secondary	Set to Primary if you are using the built-in video controller as your primary adapter; set to Secondary if you are not using your built-in controller. This setting is ignored if jumper E0290 is set to disable the built-in VGA controller and you set this option to Primary

System board options (continued)

Option	Settings	Description
Onboard Video BIOS Mapping	To E0000h* To C0000h Disabled	Select To E0000h to map the onboard video BIOS to memory address E0000h; select To C0000h to map the video BIOS to address C0000h for compatibility with older application software; this option is automatically set to Disabled if you disable the Onboard Video Controller option, as described above; the video BIOS shadow options are automatically set to Enabled at either address based on the setting selected here
640 x 480 Mode Refresh Rate (3)	60 Hz* 75 Hz x2, x16 @ 72 Hz (72 Hz in the 2 and 16 color modes only)	Select the refresh rate frequency (in Hertz) of the built-in video controller when it is operating in 640 x 480 mode; see your monitor manual to determine the refresh rate your monitor is capable of displaying
800 x 600 Mode Refresh Rate	56 Hz* 60 Hz 72 Hz	Select the refresh rate frequency (in Hertz) of the built-in video controller when it is operating in 800 x 600 mode; see your monitor manual to determine the refresh rate your monitor is capable of displaying
1024 x 768 Mode Refresh Rate	Interlaced @ 44/88 Hz Non-Interlaced @ 60 Hz Non-Interlaced @ 70 Hz Non-Interlaced @ 72 Hz	Select the refresh rate frequency (in Hertz) of the built-in video controller when it is operating in 1024 x 768 mode; see your monitor manual to determine the refresh rate your monitor is capable of displaying

System board options (continued)

Option	Settings	Description
Shadow C0000h - C7FFFh C8000h - CFFFFh E0000h - E7FFFh	Enabled (E0000h - E7FFFh*) Disabled (C0000h - C7FFFh and C8000h - CFFFFh*)	Set to Enabled to shadow ROM data to the specified memory addressrange in RAM; set to Disabled to leave data in ROM
Keyboard Control	Enabled* Disabled	Set to Enabled to allow your computerto operate with a keyboard; set to Disabled to use your computer without a keyboard (for example, as a network server) and allow power-on diagnostic test to report a disabled keyboard ratherthan a keyboard error
Onboard Mouse Control	Enabled* Disabled	Set to Enabled if you have connected a mouse to the built-in mouse port; set to Disabled if you are not using a mouse (freeshardware interrupt IRQ12) or if you are using a mouse controller installed on an option card
Speaker Control	Enabled* Disabled	Set to Enabled to turn on the computer'sbuilt-in speaker; set to Disabled to turn off the speaker (cannot be turned on by application software if Disabled)
CPU Speed	FAST SLOW	Select FAST to set the computer's processor to operate at itsmaximum speed; select SLOW to set the processor to operate at a simulated 8 MHz speed to accommodate old application programsthat may require it

System board options (continued)

Option	Settings	Description
NumLock Boot State	ON at Boot OFF at Boot*	Select ON at Boot to enable Num Lock mode whenever you turn on or reset your computer; select OFF at Boot to disable it
I/O Recovery Time	Standard Enhanced*	Select Enhanced to set fast I/O recovery times; set to Standard if you have trouble with an application program or option card that is running in enhanced mode
Posted I/O Writes	Standard* Fast Disabled	Set to Standard to improve performance by posting memory and I/O writes to the EISA bus set to Disabled if any of your option cards do not support thisfeature
Concurrent Refresh	Enabled* Disabled	Set to Enabled to improve performance by executing concurrent CPU, cache, and main memory refresh cycles; set to Disabled if you have trouble with application programswhile thisoption is enabled
LCD Operation	Enabled* Disabled	Set thisoption to Disabled; your system does not have an LCD screen
Scan FLASH User Area	Enabled Disabled*	Set to Enabled to allow the BIOS to call any code you have installed in the 8KB block EA000h to EBFFFh (FLASH user area) prior to booting the computer; set to Disabled to scan the block normally

System board options (continued)

Option	Settings	Description
POST Memory Test Prompt	Enabled * Disabled	Set to Enabled to display the skip memory test prompt when you turn on or reset your computer; select Disabled to prevent display of the prompt (You can still press the space-bar to skip the test if you disabled the prompt; see Chapter 2)
POST Setup Control	Enabled -Prompt for setup entry * Enabled -Suppress setup prompt Setup Disabled	Select Enabled -Prompt for setup entry to display the prompt to run the SETUP program when you turn on or reset the computer; select Enabled -Suppress setup prompt to prevent display of the prompt; select Setup Disabled to prevent entry into the SETUP program until this option is changed
Boot Device Control	Boot from Diskette or Hard Drive * Boot from Hard Drive Only	Select the device(s) from which you want to be able to boot your system (4)
Reserved System Resources	<i>[settings vary]</i>	Press Enter and F6 to display resources, such as interrupts and memory address ranges, reserved for use by the system board

* Default setting

- 1 To boot your system from a SCSI hard disk drive, you must disable the built-in IDE controller and set both hard disk drive types to Disabled.
- 2 You cannot set Serial Port 1 and 2 to the same address. If you attempt to do so, you see an error message.
- 3 If you change the refresh rate, you must press the reset button or turn the computer off and on again after saving your settings to reset the rate.
- 4 The Boot Device Control setting is ignored if the diskette drive is controlled by a SCSI option card.

The options described in the table below appear on the View or edit details screen only if you are running the EISA Configuration utility in Advanced mode. See “Using Special Modes” on page 3-31 for more information.

Advanced mode system board options

Option	Settings	Description
Video Font Size	9x16* 8x16	Select the font dimensions of the video characters that appear on the screen; the 9 x 16 font size should be used for most application programs
Extended Memory Range Definitions	<i>[settings vary]</i>	Displays the defined ranges of extended memory resident on the system board and allows you to customize them, though you should let the ECU automatically set them
Additional expansion board address space	Enabled Disabled*	If you have installed more than 15MB of memory in your system, you may want to set this option to Enabled to map additional address space to the EISA bus for use by option cards. Enabling this space opens a 1MB to 128KB area between addresses 0F0000h and 0FE0000h and reduces the available extended memory by 1MB. Select Disabled to use this address area for extended memory.
EISA Enhanced - Master Burst Cycles		This option has no effect on your system

Advanced mode system board options (continued)

Option	Settings	Description
Slot 4 A EN Control	EISA Compatible* ISA Compatible	When dot 4 is set to EISA Compatible, it uses the EISA geographical addressing scheme. If you set dot 4 to ISA Compatible, it allows all types of I/O accesses that may be required by option cards addressed in the range 0-255.

* Default setting

The options described in the next two tables configure the built-in SCSI controller and your SCSI devices.

Built-in SCSI controller options

Option	Settings	Description
Enabled SCSI Controller	Boot from SCSI, BIOS Mapped to C0000h Boot from SCSI, BIOS Mapped to C8000h* Boot from SCSI, BIOS Mapped to E0000h Boot from SCSI, BIOS Mapped to EC000h SCSI Hardware Enabled - SCSI BIOS Disabled Disabled	Select one of the Boot from SCSI options to enable the SCSI BIOS at the indicated address and enable the SCSI controller; select SCSI Hardware Enabled - SCSI BIOS Disabled when you boot from a non - SCSI drive to enable the SCSI hardware but not load the SCSI BIOS if you are not using the built-in SCSI sub system, select Disabled
Bus Release Time	60 BC LKS* 44 BC LKS 28 BC LC KS 12 BC LC KS 2 BC LC KS	This option sets the amount of time the SCSI controller continues to transfer data after being pre-empted by a busmaster. The default setting of 60 BC LC KS (bus clocks) is usually sufficient. If you install multiple bus master option cards select one of the faster settings to free the EISA bus sooner.

Built-in SCSI controller options (continued)

Option	Settings	Description
Data FIFO Threshold	100%* 75% 50% 00%	This option sets the percentage of data FIFO used by the controller to match SCSI and host system data transfer rates. The default setting of 100% is usually sufficient.
SCSI Channel A and B, Host Adapter SCSI ID	7* 6 5 4 3 2 1 0	Select the SCSI ID for the indicated built-in SCSI interface (host adapter); normally you should assign ID 7 to the host adapter, IDs 0 and 1 to SCSI hard disk drives, and the other IDs to other devices, if present. Because channels A and B are separate SCSI buses, you can assign each host adapter as ID 7.
SCSI Channel A and B, SCSI Bus Parity Check	Enabled* Disabled	Select Enabled to generate parity checking on the host adapter; if an attached SCSI device does not support parity checking, set this option to Disabled.
SCSI Channel A and B, SCSI Selection Time	256 milliseconds 128 milliseconds 64 milliseconds 32 milliseconds	This option sets the amount of time the host adapter uses to complete the SCSI selection phase; faster times speed up the SCSI bus but all devices on the SCSI bus must be compatible with the speed you select.
SCSI Channel A and B, SCSI Bus Reset at Power-on	Enabled* Disabled	Select Enabled to reset the SCSI bus each time you turn on or reset the computer; this option should always be set to Enabled.

Built-in SCSI controller options (continued)

Option	Settings	Description
Primary Channel Selection	A* B	Selects the order the system uses as it scans the SCSI channels at BIOS or driver initialization

* Default setting

For the options described below, press **Enter** at the main option to access the BIOS Configuration, Device Configuration, and Utilities options.

BIOS/Device Configuration and Utilities options

Option	Settings	Function
BIOS Configuration options		
Support Removable Disks as Fixed Disk	Boot Device Only* All Devices Disabled	Select Boot Device Only if you want only the removable media drive designated as the boot device to be treated as a fixed disk; select All Devices if you want all removable media devices supported by the BIOS to be treated as fixed disks; select Disabled if no removable media disks are to be treated as fixed disks (software drivers are needed for drives not controlled by the BIOS)

BIOS/Device Configuration and Utilities options (continued)

Option	Settings	Function
Extended Translation for Drives> 1G Byte	Enabled* Disabled	Select Enabled if you install hard disks larger than 1GB (up to 8GB) to extend translation to the drive by bypassing the DOS 1024 cylinder limit; if enabled and the drive is less than 1GB, the system translates it to 64 heads 32 sectors per track; if greater than 1GB, the translation is 255 heads, 63 sectors per track; select Disabled if you do not need extended translation***
Support more than two drives	Enabled* Disabled	Select Enabled to allow the BIOS to support more than two SCSI hard disks using DOS version 5.0 or later; select Disabled if you installed two or fewer drives
Device Configuration options		
Enable Disconnection	Yes* No	For a description of each of these options, highlight the option and press F1 to start the Help utility; then select Current Screen
Initiate Sync Negotiation	Yes? No	
Maximum Sync Xfer Rate	10.0*, 8.0, 6.7, 5.7, 5.0, 4.4, 4.0, and 3.6	
Include in BIOS Scan	Yes* No	
Error if Device Not Found	No* Yes	
Send Start Unit Command	No* Yes	

BIOS/Device Configuration and Utilities options (continued)

Option	Settings	Function
Utilities option		
Disk Format Utility		This utility performs a low-level format on your SCSI hard disk and/or checks the disk for defects. Be sure to save your configuration, reboot your system, and restart the EISA Configuration Utility before you run this utility.

* Default setting

** Removable drives treated as fixed disks are allowed by the BIOS, but you cannot remove the media during operation.

*** Do not enable this option if you are using an operating system that does not support extended translation—such as NetWare 386 or UNIX—because you could lose data or cause a drive failure.

Hard Disk Drive Types

The following table lists the types of IDE hard disk drives you can use in your computer. Check this table and the manual that came with your hard disk to find the correct type for the hard disk drive(s) installed in your computer.

Note

Be sure you enter the correct drive type or parameters for your drive; if they are incorrect, the computer will not recognize your drive.

Hard disk drive types

Type	Cyl	Hds	PC	Sect	Size
01	610	4	-1	17	20MB
02	—	—	—	—	User-definable
03	—	—	—	—	User-definable
04	940	8	512	17	62MB
05	940	6	512	17	46MB
06	820	10	-1	17	68MB
07	918	15	-1	17	114MB
08	762	8	0	39	116MB
09	900	15	-1	17	112MB
10	977	5	0	17	40MB
11	855	5	-1	17	35MB
12	855	7	-1	17	49MB
13	978	14	-1	35	233MB
14	733	7	-1	17	42MB
16	615	4	-1	17	20MB
17	—	—	—	—	Unused
18	977	7	-1	17	56MB
19	1024	7	512	17	59MB
20	814	9	-1	32	114MB
21	968	10	-1	34	160MB
22	873	13	-1	36	199MB
23	636	16	-1	63	313MB
24	830	10	-1	26	105MB
25	751	8	-1	17	49MB
26	755	16	-1	17	100MB

Hard disk drive types(continued)

Type	Cyl	Hds	PC	Sect	Size
27	1024	5	-1	17	42MB
28	1024	8	-1	17	68MB
29	584	16	-1	32	146MB
30	311	16	-1	63	153MB
31	989	5	0	17	41MB
32	—	—	—	—	Unused
33	965	5	-1	17	40MB
34	965	10	-1	17	80MB
35	1024	9	-1	17	76MB
36	—	—	—	—	Unused
37	830	10	-1	17	68MB
38	832	6	-1	33	80MB
39	776	8	-1	33	100MB
40	615	8	128	17	40MB
41	917	15	-1	17	114MB
42	1023	15	-1	17	127MB
43	—	—	—	—	Unused
44	820	6	-1	17	40MB
45	—	—	—	—	Unused
46	925	9	-1	17	69MB
47	699	7	256	17	40MB
48	—	—	—	—	User-defina ble
49	—	—	—	—	User-defina ble

Using Advanced Configuration Options

To perform advanced configuration operations, press F7 at the View or edit details screen. You see the Advanced menu:

- Lock/unlock boards
- View additional system information menu
- Set verification mode menu
- Maintain SCI files menu

The table below describes the operations you can select from the Advanced menu and its submenus.

Advanced configuration options

Advanced menu option	Submenu option	Description
Lock/unlock boards	No submenu	Displays the locked/unlocked status of each board. Locking a board prevents you from changing any of its configuration settings
View additional system information menu	Board specifications	Displays information about the identification and physical characteristics of your board(s).
	System specifications	Displays information about the option slots in your computer.
	Used resources	Displays information about the currently used system resources such as IRQ levels, interface ports and memory addresses and defines which components are using the resources
	Available resources	Displays information about unassigned system resources such as IRQ levels, interface ports, and memory addresses.

Advanced configuration options (continued)

Advanced menu option	Submenu option	Description
Set verification mode menu	Automatic	Sets the program to automatically check for resource conflicts and report them, if they occur (default setting).
	Manual	Sets the program so it does not check for resource conflicts unless you select the Verify option that appears on the View or edit details screen. (The Verify option appears only if you have selected Manual verify.)
Maintain SCI filesmenu	Open	Loads a previously created SCI file and displays the contents. Any current configuration information you entered is lost.
	Save as	Saves the current SCI file information to a backup file. Do not name the backup file SYSTEM.SCI.

Using Alternate Configuration Files

When you save your configuration in your computer's CMOS RAM, the computer also creates or updates the System Configuration Information file called SYSTEM.SCI. You can also create an alternate SCI file with a different name for your own computer or for another EPSON EISA computer.

You may want to create an alternate configuration for your own computer that includes a different set of option cards. Then, whenever you need to use that configuration, you can load the alternate SCI file and save it in your computer's CMOS RAM.

If you run the EISA Configuration utility on a non-target computer (an IBM AT compatible computer or another EPSON EISA computer), you can create a file for the target computer. Then you can transport the alternate SCI file to the target computer, load it, and save it in that computer's CMOS RAM.

To create an alternate SCI file, follow the guidelines in the next section. To load an alternate SCI file when you need to use one, see "Loading an Alternate SCI File" below.

Creating an Alternate SCI File

You can create an alternate SCI file using the following methods:

- ☐ Select Create a backup SCI file from the Maintain system configuration diskette menu.
- ☐ Select the Save as option from the Maintain SCI files menu when you are using the advanced configuration options.
- ☐ Run the EISA Configuration utility in non-target modeling mode and save the configuration you create to a backup SCI file when you exit.

The program asks you to name the alternate SCI file you create. Do not name the file SYSTEM.SCI; this is the name of your current configuration file.

Run the EISA Configuration utility in non-target modeling mode only when you are running the configuration program on a non-target computer. This method protects you from accidentally saving the configuration you create in that computer's CMOS RAM. See "Using Special Modes" for instructions on using non-target modeling mode.

Loading an Alternate SCI File

To load an alternate SCI file and store it in the target computer's CMOS RAM, follow these steps:

1. Select Maintain system configuration diskette from the EISA Configuration utility Main Menu.
2. Select Load a backup SCI file.
3. Select the alternate SCI file you want to load from the list of SCI files displayed on the screen.
4. Exit and save the SCI file in the computer's CMOS RAM.

Note

You can also load an alternate SCI file by selecting Open from the Maintain SCI files menu when you are using the advanced configuration options. (See page 3-29.) This method allows you to load the file while you are looking at the View or edit details screen for another configuration. However, the Open option erases the currently loaded configuration before loading the new file.

Now the computer is configured according to the information in the alternate SCI file.

Using Special Modes

You can run the EISA Configuration utility in various special modes, including non-target modeling mode, by starting the program with one of the two commands described in this section. You can also use these commands to run the utility from a hard disk that runs MS-DOS if you copy the necessary files to the disk first.

The SD command starts the EISA Configuration utility and also allows you to run any of the other utilities available on the Access to other utilities menu. The CF command also starts the EISA Configuration utility, but you cannot run any other utilities.

You can run the utilities in different modes by including one or more parameters on the SD or CF command line, as described in the next sections.

Using the SD Command

The SD command starts the EISA Configuration utility and also allows you to run any of the other utilities available on the Access to other utilities menu. If you want to run the utilities from your hard disk, first follow the instructions under “Copying the Configuration Files to a Hard Disk” on page 3-36. Then follow these steps to use the SD command:

1. To run the utilities from a diskette, insert the System Configuration diskette in drive A and log onto drive A

To run the utilities from a hard disk, log onto the drive and directory where you copied the configuration files.

2. Type the following and press **Enter** to start the program:

SD *[parameters]*

The table below describes the parameters you can use to modify the way the program runs on your computer.

Note

To run the EISA Configuration utility in non-target modeling mode, add the /N parameter to the command line. Modeling mode only affects the way the configuration utility operates; it does not affect any of the other utilities you can run using the SD command.

SD command parameters

Parameter	Mode	Function
/A	Advanced mode	Enables four advanced options for the system on the View or edit details screen; see page 3-28 for more information. You can also enter this mode by pressing Ctrl Alt at the Welcome screen when you start the EISA Configuration utility.
/B	BIOS video output mode	Displays the program using BIOS int 10h calls for systems with non-standard displays or systems that are redirecting the console output to a serial port. In default mode, the program writes directly to the video memory.
/F	Automatic configuration operation	Determines the boards and options installed and configures your system automatically using the information in the flash RAM; if it is invalid, the program uses the information in the SYTEM.SCI file.
/H	High resolution display mode	Displays 43 lines per screen on an EGA monitor and 50 lines per screen on a VGA monitor. In default mode, the screen displays 25 lines.

SD command parameters (continued)

Parameter	Mode	Function
/K	Keyboard only mode	Sets the program so a mouse cannot be used, even if you have installed one. In default mode, you can use a mouse as long as a mouse driver is loaded.
/M	Monochrome display mode	Displays the program in black and white only. In default mode, color monitors will display in color. Run the program in this mode if you have redirected the console output to a serial port.
/N	Non-target modeling mode	Allows you to run the EISA Configuration utility in non-target modeling mode; see page 3-31 for more information.
/P	Permanent command interpreter mode	Reboots the system instead of exiting to your operating system. Use this mode if there is no COMMAND.COM file installed on your hard disk drive.

Using the CF Command

The CF command starts the EISA Configuration utility, but you cannot run any other utilities. If you want to run the EISA Configuration utility from your hard disk, first follow the instructions under “Copying the Configuration Files to a Hard Disk” on page 3-36.

Then follow these steps to use the CF command:

1. To run the utility from a diskette, insert the System Configuration diskette in drive A and log onto drive A. To run the utility from a hard disk, log onto the drive and directory where you copied the configuration files.

2. Then type the following and press **Enter** to start the program :

CF [parameters]

The table below describes the parameters you can use to modify the way the utility runs on your computer.

CF command parameters

Parameter	Mode	Function
<i>/A</i>	Advanced mode	Enables four advanced options for the system on the View or edit detailsscreen; see page 3-28 for more information.
<i>/B</i>	BIOS video output mode	Displays the program using BIOS int 10h calls for systems with non-standard displays or that are redirecting the console output to a serial port. In default mode, the program writes directly to the video memory.
<i>/D</i>	Dispatcher spawning mode	Causes the program to be spawned by the dispatcher.
<i>/F</i>	Fad configuration operation	Determines the boards and options installed and configures your system automatically using the information in the CMOSRAM; if it is invalid, the program uses the information in the SYSTEM.SCI file.
<i>/H</i>	High resolution display mode	Displays 43 lines per screen on an EGA monitorand 50 lines per Screen on a VGA monitor. In default mode, the Screen displays 25 lines.
<i>/K</i>	Keyboard only mode	Sets the program so a mouse cannot be used, even if you have installed one. In default mode, you can use a mouse as long as a mouse driver is loaded.

CF command parameters (continued)

Parameter	Mode	Function
/M	Monochrome display mode	Displays the program in black and white only. In default mode, color monitors will display in color. Run the program in this mode if you have redirected the console output to a serial port.
/N	Non-target modeling mode	Allows you to run the EISA Configuration utility in non-target modeling mode; see page 3-31 for more information.
/}	Suppress reboot mode	Exits the program without rebooting the computer.

Copying the Configuration Files to a Hard Disk

To run the EISA Configuration utility from your hard disk, you must be running MS-DOS from that disk.

To copy all the configuration files from the System Configuration diskette to the hard disk, insert the diskette in drive A, type the following command, and press **Enter**:

COPY A:*. * [d:] [path]

where *d:* and *path* are the drive and directory to which you want to copy the files.

Chapter 4

Using Your Computer

This chapter describes the following operations:

- ☐ Working comfortably
- ☐ Locking the computer's cover
- ☐ Locking the front panel door
- ☐ Disabling the keyboard and mouse
- ☐ Using the password features
- ☐ Locking the keyboard
- ☐ Changing the processor speed
- ☐ Controlling the speaker
- ☐ Controlling the cache
- ☐ Using the security features
- ☐ Installing the video drivers and utilities
- ☐ Using the SCSI subsystem
- ☐ Using special configurations
- ☐ Operating the computer from a remote location.

Working Comfortably

If you spend a lot of time at your computer, you may experience occasional fatigue or discomfort caused by repetitive motions or too much time spent in one position. If you follow the guidelines in this section, you may avoid these problems and actually increase your productivity.

Take a few minutes to read this section for suggestions about:

- ☐ Using the right furniture
- ☐ Positioning your monitor
- ☐ Lighting your workspace
- ☐ Using a keyboard and mouse

Maintaining good posture and work habits.

Using the Right Furniture



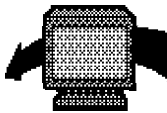
Selecting a good desk and using the right type of chair can make a big difference in your level of comfort. When you set up your furniture, consider these suggestions:

An L- or U-shaped desk configuration works well because it provides ample space to hold your computer equipment and work materials while keeping everything within easy reach. A split-level desk or one with a pull-out keyboard drawer lets you place the keyboard on a surface lower than the one supporting the computer.

Since you'll be sitting most of the time you use your computer, it's important to have a good chair. An adjustable chair allows you to support your body in the correct position. Make sure the chair supports your lower back; the backrest should fit the curvature of your spine. To reduce fatigue, try to use a chair with adjustable, padded armrests so you can occasionally rest your arms while you work.

Make sure the seat and backrest are wide enough so you can sit in a variety of positions throughout the day. Also leave enough room under the work surface so you can vary the position of your legs.

Adjust the height of your chair so when you are using the keyboard or mouse your upper arms are vertical and your forearms and wrists are horizontal. For good circulation, your feet should rest flat on the floor with your lower legs vertical and your knees level with your hips. You may need to use a footrest to maintain the correct alignment for your legs.



Positioning Your Monitor

Place the monitor so it is directly in front of you with the top of the screen slightly below eye level when you are sitting at the computer. You may want to place it on top of the computer or on a stand.

Your line of sight to the screen should be about 10 to 20 degrees below the horizontal. If the monitor has a tilt and swivel base, you can adjust the position of the monitor screen for the best viewing angle.

Sit about an arm's length or more away from the monitor. The most comfortable viewing distance depends on the size of the screen characters and your ability to focus on the display.

Adjust the monitor's brightness and contrast controls to maximize image clarity, and keep the screen clean.

Try placing any source documents you are using on a copy stand and position the stand next to the screen at the same eye level. This reduces neck strain and makes it easier for your eyes to move back and forth between the document and the screen.



Lighting Your Workspace

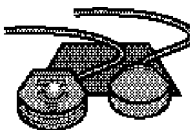
Appropriate lighting increases your comfort and productivity, and it's good for your eyes.

Arrange your computer and light sources to minimize glare and bright reflections.

Position the monitor so that any windows in the room face the sides of the monitor, not the front or back. This will help reduce glare.

For working at the computer, indirect or shielded lighting is best, and it should light your entire office equally. Make sure the lighting is not too bright, because this can make your eyes tired from continually readjusting between the relative dimness of the screen and the bright surroundings. You can use window blinds, shades, or drapes to control the amount of daylight in the room or reduce overhead lighting by turning off or dimming the lights.

Here is a simple way you can test your lighting. While looking at the screen, use your hand to shield your eyes from the brightest light source in the room (such as a window or overhead light). If you feel a sense of relief, no matter how small, your current lighting is too bright.



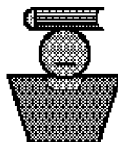
Using the Keyboard and Mouse

Constant use of a keyboard, mouse, or any pointing device can lead to a variety of aches and strains. To prevent injury, keep your hands relaxed and rest them frequently.

Try to keep your fingers parallel with your forearms to prevent straining your wrists. Adjust the angle of the keyboard so the slope is no more than 25 degrees. (The keyboard has legs on the bottom which allow you to adjust the angle.)

Keep your hands and fingers relaxed when you are typing and try not to hit the keys too hard; using too much force creates tension in your hands. Remove your hands from the keyboard when you are not using it and take frequent breaks to stretch your hands and fingers.

When using a mouse, keep your wrist and fingers relaxed. Let go of the mouse frequently and stretch or relax your hand. Leave enough space on your work surface so you can freely move the mouse.



Maintaining Good Posture and Work Habits

Here are suggestions to help you stay fit while using your computer. If you form good work habits, you shouldn't have to spend too much time thinking about it!

- ☐ Work in a relaxed, natural, upright position and let the chair support you. Your back and neck should be straight with your shoulders down and relaxed. Keep the elbows and hips bent at about a 90 degree angle and your forearms and thighs parallel to the floor.
- ☐ Try to keep your arms in an easy, natural position with your elbows near your body and level with or slightly lower than the keyboard. Your wrists should be straight, not bent, and your hands should rest lightly on the keys and the mouse.
- ☐ Rest your eyes occasionally by closing them or focusing on a fixed spot in the distance.

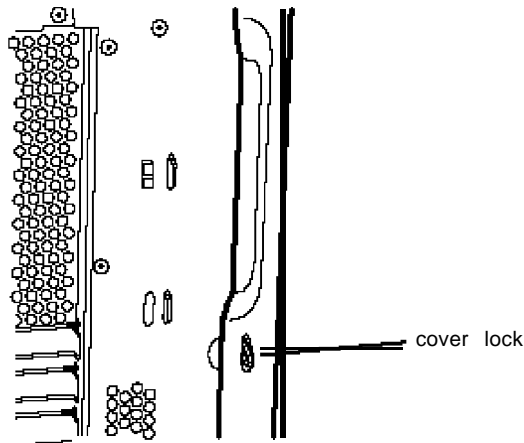
- ❑ Change your sitting position frequently throughout the day to avoid muscle fatigue. Take periodic breaks; stand up, stretch, and move around.

Locking the Computer's Cover

You can lock the cover onto the computer to prevent unauthorized users from accessing its internal components. To do this, you need a padlock that fits through the hole in the lock block on the computer's back panel. When the padlock is in place, the cover on the computer cannot be removed.

You can also secure the computer to your work area by inserting a cable lock through the lock block and then through a secure anchor.

To lock the cover, insert a padlock or cable lock through the hole in the lock block.



To unlock the cover, remove the padlock or cable lock.

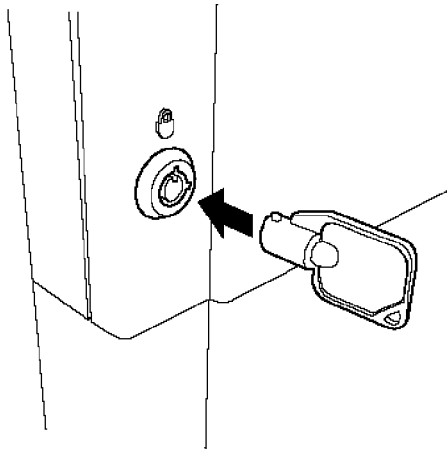
Locking the Front Panel Door

You can lock the door that covers your computer's front panel to prevent unauthorized users from accessing these components:

- ☐ Diskette, tape, CD-ROM, or other external drives
- ☐ Power and reset buttons
- ☐ Keyboard/ mouse lock button

Your computer comes with two keys that you can use to lock the front panel door. Open the front panel door and remove the keys from the bag taped to the inside of the door.

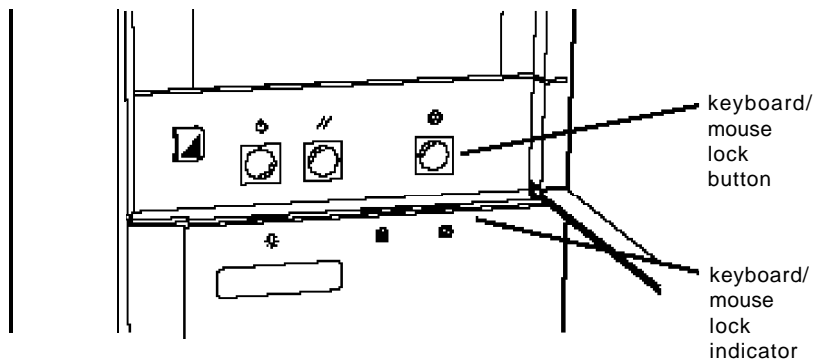
To unlock the front panel door, align the key with the notch in the lock and insert the key, as shown below. Then press in the key and turn it clockwise.



To lock the cover, align the notches and insert the key; then push it in and turn it counterclockwise. Be sure to store the keys in a secure location.

Disabling the Keyboard and Mouse

You can disable the operation of your computer's keyboard and mouse to prevent unauthorized users from executing any keyboard or mouse commands. To do this, press the keyboard/ mouse lock button on the front panel, as shown below. The computer disables the keyboard and mouse, and illuminates the keyboard/ mouse lock indicator light.



To prevent access to the keyboard/ mouse lock button, follow the instructions on page 4-7 to lock the computer's front panel door.

To reactivate the keyboard and mouse, unlock the front panel door (if necessary), and press the keyboard/ mouse lock button again. The keyboard/ mouse lock indicator light goes out.

Note

You can temporarily disable the keyboard and mouse using the SETUP program or EISA Configuration utility. See Chapters 2 and 3 for more information.

Using the Password Features

You can set three types of passwords to provide security for your computer:

- ☐ Power-on password
- ☐ Network password
- ☐ Keyboard password.

The power-on password prevents unauthorized users from using your system by requiring you to enter the correct password every time you turn on or reset the computer.

The network password modifies the way your power-on password works by allowing your computer to load your operating system and network software before requiring you to enter the correct password. This enables your system to connect to the network, while preventing unauthorized users from typing anything at the keyboard.

The keyboard password allows you to temporarily lock the keyboard without having to reset the computer. This secures your system when you will be away from it for a while. If you set a power-on password, it automatically becomes your keyboard password as well. However, you can set a different keyboard password or set a keyboard password without setting a power-on password.

Follow the instructions in the sections below to set, enter, change, or delete the different types of passwords.

Setting Passwords

There are two ways to set a power-on password:

- ☐ Using the SETUP program
- ☐ Using the EISA System Utilities.

To set a power-on password in SETUP, follow the instructions in Chapter 2 for starting and running the program. Select the Password option on the second page of SETUP options and follow the instructions on the screen to set a password.

You must run the EISA System Utilities to set a network and keyboard password, but you can also use it to set a power-on password.

Follow these steps to set your password (s):

1. To start the EISA Configuration utility, insert the System Configuration diskette in drive A.
2. Log onto drive A and type SD. Press **Enter** at the next two screens to bring up the Main Menu.
3. Select Access System Utilities.
4. Then select Password Utility. You see the following:

Password Utility Menu

```
Set Initial Power-on Password
Activate/Deactivate Network Password
Set Keyboard Password
Lock Keyboard
Return to Utilities Menu
```

Now follow the steps in the appropriate section(s) below.

Setting a power-on password

To set a power-on password, follow these steps:

1. Select **Set Initial Power-on Password** at the Password Utility Menu.
2. You see a prompt to enter a password of up to seven characters. Follow the instructions on the screen to enter the password twice and return to the Password Utility Menu.
3. Your power-on password is also now your keyboard password. If you want to set a different keyboard password, see “Setting a keyboard password” below.

If you will be using your computer in a network, follow the steps in the next section to activate a network password.

Activating a network password

To activate a network password, follow these steps:

1. First set a power-on password as described above.
2. Select **Activate/Deactivate Network Password** from the Password Utility Menu.
3. At the Network Password menu, select **Activate Network Password**.
4. You see a message confirming the activation. Press **Enter**. You see the Password Utility Menu.

To deactivate a network password, follow the steps above, but select **Deactivate Network Password** instead. If you want to set a different keyboard password, see the next section.

Setting a keyboard password

Once you set a power-on password, it automatically becomes your keyboard password as well. If you want to use a different password for the keyboard, you can set one with the Set Keyboard Password option. This password takes effect only temporarily, however; when you turn off your computer, the power-on password again becomes your keyboard password.

You can also set a keyboard password without setting a power-on password, but when you turn off your computer or press the reset button, it erases the keyboard password.

Follow these steps to set a keyboard password:

1. Select Set Keyboard Password at the Password Utility Menu.
2. You see a prompt to enter a new password that will be your keyboard password. Type a new password and press **Enter**.
3. At the next prompt, enter the password again. You see the Password Utility Menu.

Whenever you want to lock your keyboard temporarily, follow the steps on page 4-16.

Entering Passwords

If you set a power-on password, you must enter it each time you turn on the computer, press the reset button, or press **Ctrl Alt Del**. This is also true if you activate a network password.

If you set a keyboard password, you can lock your keyboard, and then you must enter your keyboard password to unlock it. See page 4-16 for instructions on locking your keyboard and entering your keyboard password.

Follow these steps to enter a power-on password:

1. When you turn on your computer, press the reset button, or press **Ctrl Alt Del**, you see the following prompt:

Enter password:

2. Type your password and press **Enter**. The screen does not display what you type.

After you enter the correct password, you see Password OK and the computer loads your operating system.

If you do not enter the correct password, you see Password is incorrect and another prompt to enter the password. You have two more chances to enter the correct password; try again.

If you do not enter the correct password at the third prompt, you see the following message:

System halted! Must power down.

The computer locks the keyboard. Press the reset button or turn the computer off and on; then try to enter the correct password again.

Changing or Deleting Passwords

You can change or delete the power-on password whenever you see the Enter password: prompt, as described in this section.

However, you cannot change or delete the power-on password if a network password is activated. See page 4-11 for instructions on deactivating the network password and then return to this section to change or delete the power-on password.

There are several methods you can use to change or delete a keyboard password. See the appropriate section(s) below to change or delete your password(s).

Changing or deleting a power-on password

To change or delete a power-on password, follow these steps:

1. Turn on the computer, press the reset button, or press **Ctrl Alt Del**. You see the following prompt:

Enter password:

2. To change the password, type the current password followed by a forward slash (/). After the slash, enter the new password, another slash, and the new password again. For example:

123/ABC/ABC

To delete a password, type the current password followed only by a forward slash (/). For example:

123/

(The screen does not display what you type.)

3. Press **Enter**. You see a message confirming the change or deletion.

Changing or deleting a keyboard password

If your keyboard password is the same as your power-on password, follow the steps in the section above to change or delete it. Then reboot your system.

If your keyboard password is different from your power-on password, you can make both passwords the same by turning off or resetting your computer.

To temporarily change your keyboard password to something other than your power-on password, follow these steps:

1. To start the EISA Configuration utility, insert the System Configuration diskette in drive A.
2. Log onto drive A and type SD. Press **Enter** at the next two screens to bring up the Main Menu.
3. Select Access System Utilities
4. Select Password Utility.
5. Then select Set Keyboard Password. You see a message telling you that a keyboard password already exists. Press **Enter**.
6. The computer locks the keyboard and you see a prompt to enter your password. Type your power-on password and press **Enter**.
7. You see a prompt to enter your new keyboard password. Type a new password and press **Enter**.
8. At the next prompt, enter the password again. You see the Password Utility Menu. Follow the instructions on the screen to exit the EISA Configuration utility.

Locking the Keyboard

You can temporarily lock the keyboard to secure your system when you are going to leave it unattended. Then, when you return, you can enter a special keyboard password to unlock it.

To lock your keyboard, you must first set a keyboard password, as described on page 4-12. Then follow these steps whenever you want to lock your keyboard:

1. To start the EISA Configuration utility, insert the System Configuration diskette in drive A.
2. Log onto drive A and type SD. Press Enter at the next two screens to bring up the Main Menu.
3. Select Access System Utilities.
4. Then select Password Utility. You see the following:

Password Utility Menu

Set Initial Power-on Password
Activate/Deactivate Network Password
Set Keyboard Password
Lock Keyboard
Return to Utilities Menu

5. Select Lock Keyboard.
6. The computer locks the keyboard and you see the following prompt:

KEYBOARD LOCKED

The keyboard has been locked. Please enter the keyboard password to unlock it:

When you are ready to use your computer again, type your keyboard password and press **Enter**. You see the Password Utility Menu.

If you enter an incorrect password, the prompt remains on the screen. Try entering it again; you can try as many times as you want.

7. Follow the instructions on the screen to exit the EISA Configuration utility.

Changing the Processor Speed

Your computer's processor can operate at two speeds: high and low. High speed is the maximum speed of your microprocessor and low speed simulates an 8 MHz processor speed to provide compatibility with certain older application programs. (See your program manual to see if you need to set your processor speed to low.)

You set the default processor (or CPU) speed when you ran either the SETUP program or the EISA Configuration utility (described in Chapters 2 and 3). If necessary, you can temporarily change the processor speed using keyboard commands or the EISA System Utilities.

If you often use programs that require the processor to operate at low speed (8 MHz), use the SETUP program or EISA Configuration utility to set the default CPU speed to low. See Chapters 2 and 3 for instructions. If you use these programs only occasionally, use the keyboard commands or the EISA System Utilities program, described below, to change the processor speed temporarily.

Entering Keyboard Commands

To change the processor speed, enter one of the keyboard commands shown in the table below.

Keyboard Feed setting commands

Key command	Function
Ctrl Alt 1	Changesthe speed to low (simulated 8 MHz)
Ctrl Alt 2	Changesthe speed to high

You must use the 1 or 2 key located on the numeric keypad. When you set the speed to low, you hear a low tone from the computer's speaker; when you set it to high, you hear a high tone. The speed setting remains in effect until you press the reset button or turn off the computer, or until you change the setting.

Note

You can use these commands while you are running a program. However, if that program uses the key command for another function, you cannot use it to change the processor speed. If this is the case, exit to your operating system command prompt and try the command or use the EISA System Utilities to change the speed, as described below.

Using the EISA System Utilities

You can temporarily change the processor speed using the EISA System Utilities. This method is convenient if your application program does not recognize the **Ctrl Alt** key commands to change the processor speed. Follow these steps:

1. Insert the System Configuration diskette in drive A.
2. Log onto drive A and type SD. Press **Enter** at the next two screens to bring up the Main Menu.
3. Select Access System Utilities from the Main Menu. You see the following:

System Utilities Menu

```

Password Utility
System Speed FAST
System Speed SLOW
Speaker ON
Speaker OFF
Cache ON
Cache OFF
EXIT   Utilities
```

4. Select System Speed FAST or System Speed SLOW. You see a message confirming the speed change.
5. Press **Enter** to return to the System Utilities Menu. Then follow the instructions on the screen to exit the EISA Configuration utility.

The processor speed you set remains in effect until you press the reset button, turn off the computer, or change it to a different setting.

Controlling the Speaker

You can enable or disable the computer's speaker using the following three programs:

☐ SETUP

☐ EISA Configuration utility

☐ EISA System Utilities.

Both the SETUP program and the EISA Configuration utility allow you to define the default setting for the speaker. Follow the instructions in Chapters 2 and 3.

If you want to change the default setting temporarily, use the EISA System Utilities, as described below. Then, whenever you turn off or reset the computer, the setting returns to the default setting you selected in the SETUP program or the EISA Configuration utility.

1. Insert the System Configuration diskette in drive A.
2. Log onto drive A and type SD. Press **Enter** at the next two screens to bring up the Main Menu.
3. Select Access System Utilities from the Main Menu.
You see the following:

System Utilities Menu

```
Password Utility
System Speed FAST
System Speed SLOW
Speaker ON
Speaker OFF
Cache ON
Cache OFF
EXIT Utilities
```

4. Select **Speaker ON** or **Speaker OFF**. You see a message confirming the new setting.
5. Press **Enter** to return to the System Utilities Menu. Then follow the instructions on the screen to exit the EISA Configuration utility.

The setting you define remains in effect until you turn off or reset the computer, or until you change it to a different setting.

Controlling the Cache

You can enable or disable the internal and external cache memory in your computer using the following three programs:

- ☐ **SETUP** program
- ☐ **EISA Configuration** utility
- ☐ **EISA System Utilities**.

Both the **SETUP** program and the **EISA Configuration** utility allow you to define the default setting for your computer's cache. See Chapters 2 and 3 for instructions.

If you want to change the default setting temporarily, use the EISA System Utilities, as described below. Then, whenever you turn off or reset the computer, the setting returns to the default setting you selected in the SETUP program or the EISA Configuration utility.

1. To start the EISA Configuration utility, insert the System Configuration diskette in drive A.
2. Log onto drive A and type SD. Press **Enter** at the next two screens to bring up the Main Menu.
3. Select Access System Utilities from the Main Menu. You see the following:

System Utilities Menu

```
Password Utility
System Speed FAST
System Speed SLOW
Speaker ON
Speaker OFF
Cache ON
Cache OFF
EXIT Utilities
```

4. Select Cache ON or Cache OFF. You see a message confirming the new setting.
5. Press **Enter** to return to the System Utilities Menu. Then follow the instructions on the screen to exit the EISA Configuration utility.

The setting you define remains in effect until you turn off or reset the computer, or until you change it to a different setting.

Using the Security Features

Your computer comes with several security features that allow you to prevent access to the computer hardware and software. You may want to use one or more of the following features to ensure that your system is secure:

- ❑ **Set passwords.** You can create unique power-on, network, or keyboard passwords to prevent unauthorized users from accessing your computer when it is operating. See page 4-9 for complete instructions.
- ❑ **Lock the keyboard and mouse.** You can disable your keyboard and mouse controller by pressing the keyboard/mouse lock button on the computer's front panel. This prevents any unauthorized input. See page 4-8 for more information.
- ❑ **Suppress the SETUP prompt.** You can set an option in the SETUP program or EISA Configuration utility to prevent the computer from displaying the prompt to run the SETUP program. Although you can still enter the command to start the program, the prompt cannot be seen. See Chapters 2 and 3 for instructions.
- ❑ **Set jumpers.** You can customize the jumper settings on your computer's main system board to prevent alteration of SETUP or EISA configuration information and disable writes to the diskette drive(s). See Chapter 6 for more information.
- ❑ **Lock up the computer's components.** You can install a padlock or cable lock to prevent removal of the computer's cover or to lock it to your work area. You can also lock the front panel door to prevent access to the front panel buttons and your externally accessible drives. See pages 4-6 and 4-7 for instructions.

You might want to use several of these features together, depending on the level of security you need for your computer. For example, if you rarely plan to leave the computer unattended, you may use only the keyboard/ mouse lock button. However, if you plan to operate the computer in a remote location, you may want to set the main system board jumpers and lock the cover and front panel door. Try the combination of features that is best for you.

Installing the Video Drivers and Utilities

Your system includes video drivers for certain versions of popular MS-DOS application programs and for Windows 3.1, as well as several MS-DOS video utilities. These drivers and utilities, as well as installation programs for them, are contained on the two Video Drivers diskettes.

After you have configured your system, you should install the video drivers for the application programs you plan to use so you can take full advantage of your video controller's capabilities.

Follow the instructions in this section to run the video driver installation programs. Then see the README.TXT file on each Video Drivers diskette for additional information about the drivers on the diskette.

Installing MS-DOS Video Drivers and Utilities

Follow these steps to run the MS-DOS video drivers and utilities installation program :

1. Insert the Video Drivers diskette for MS-DOS applications in Drive A.
2. At the MS-DOS prompt, type **A: INSTALL** and press **Enter**.

3. Follow the instructions on the screen to install the drivers for the applications you plan to use.

Installing Windows 3.1 Drivers

Before you install the Windows video drivers, install the Windows program on your computer's hard disk drive. Then follow these steps to install the drivers:

1. Start the Windows Program Manager.
2. Insert the Video Drivers for Microsoft Windows diskette in drive A.
3. Select File from the menu bar.
4. Select Run.
5. In the Command Line box type A: \WDSETUP.
6. Click on OK or press Enter. The WDSETUP program starts.
7. Select Setup from the menu bar.
8. Then select Add Video Driver.
9. Select drive A to change the Driver Directory setting.
10. Select the driver(s) you want to install; then click on the Add Driver button.
11. Click on the close button to close the window.
12. At the next window, select the driver resolution(s) you want to use; then click on Restart Windows.

The program decompresses the driver files, writes them to your hard disk drive, and restarts Windows.

If you want to change the installed drivers, perform steps 1 through 6 above. Then click on the blue icon in the upper right corner of the window. Choose a new driver and click on Restart Windows.

Using the SCSI Subsystem

This section describes the basic operations you need to perform to use your computer's built-in SCSI II subsystem. The SCSI subsystem consists of the following items:

- ☐ Adaptec AIC-7770 Twin Channel SCSI-2 controller
- ☐ Two S-bit SCSI channels provided on two SCSI interfaces built into the main system board
- ☐ One SCSI device cable for connecting up to 7 internal SCSI devices
- ☐ RISC-based Phase Engine Sequencer
- ☐ SCSI BIOS located within the system BIOS
- ☐ SCSI device drivers for DOS, Windows, OS/2, NetWare, Windows NT, and SCO UNIX.

The SCSI-2 controller supports fast and narrow SCSI, and transfers data at 10MB per second. Command execution takes only 35 μ s (microseconds), compared to 350 μ s on other SCSI controllers.

The system uses the controller as bus master slot 9 of the EISA bus, allowing it to burst 32-bit data onto the I/O bus at up to 33MB per second and avoid I/O bus control and compatibility problems. It also provides extended translation for hard disk drives larger than 1GB capacity (up to 8GB) directly from the system BIOS. In addition, the controller can handle four simultaneous I/O tasks for Windows NT, UNIX or OS/2.

Installing SCSI Terminators

Your SCSI devices communicate with each other and with the controller along the SCSI bus. For each SCSI bus you use (channel A and channel B), you must mark both “ends” of the bus with SCSI terminators. The ends of the bus are the first device on one end of the bus (such as your SCSI interface) and the last device on the other end (such as a SCSI hard disk drive).

You usually install a terminator on the printed circuit board of a SCSI device. In your computer, each of the built-in SCSI interfaces have a built-in terminator, so you do not have to install any to terminate the interface end of the bus. However, you must install a terminator on the SCSI device that you assign as the last device on the other end of the bus. You must also remove any terminators that are installed on any devices installed between the interface and the device on the other end of the bus. See your SCSI device documentation for instructions on installing and removing the terminators on your devices.

Note

If you connect with a built-in terminator that you cannot remove, **that device must be the last device on the SCSI bus.**

Installing SCSI Devices

The two SCSI channels in your computer each support up to seven differential-pair or single-ended SCSI devices for a total of 14 devices. Your system includes a SCSI device cable for one of the channels to which you can connect up to seven SCSI devices (including the interface). Follow the instructions in Chapter 7 for installing SCSI devices in your computer.

Configuring the SCSI Subsystem

You can easily configure the SCSI controller, BIOS, and devices for both channels using the EISA Configuration utility on your computer's System Configuration diskette.

The EISA Configuration utility includes a SCSI disk formatting utility so you can format your SCSI devices as you configure your system. See Chapter 3 for instructions on using the EISA Configuration utility to configure your SCSI subsystem.

Installing SCSI Software

The SCSI driver diskettes include drivers and driver installation programs for the operating systems mentioned above. The EZ-SCSI program installs SCSI device drivers for the following versions of DOS:

- ☐ MS-DOS and IBM DOS 3.30 and 4.0x
- ☐ MS-DOS 5.0 and 6.X
- ☐ Compaq[®] DOS 3.31

For instructions on using EZ-SCSI and its related ASPI utilities, and on loading the drivers and managers into high memory, see Chapters 1 through 5 of your *X-Series SCSI Software User's Guide for the AIC-7770*. Appendices D and E of that manual describe the functioning of the drivers and utilities EZ-SCSI installs.

The SCSI driver diskettes also contain the ASPI Manager Set which supports NetWare, OS/2, and UNIX. See Chapters 6 through 9 of the *SCSI Software User's Guide* for instructions on using the manager for one of these operating systems.

Using Special Configurations

If you are going to use your computer without a major component—such as a keyboard, monitor, or diskette drive—you must take some steps to ensure that your system operates correctly. Be sure to do the following, depending on which component you will not use:

- ❑ Install your monitor, keyboard, and, if necessary, diskette drive as you set up your computer so you can run the SETUP program or EISA Configuration utility. You can remove any of this equipment once you have configured your system. See Chapter 1 for instructions.
- ❑ If you'll be removing the keyboard, be sure to disable the Keyboard (SETUP program) or Keyboard Control (EISA Configuration utility) option to prevent your computer's power-on diagnostic tests from reporting a fatal keyboard error. When these options are disabled, the system reports a non-fatal keyboard error and you can still boot the computer. See Chapters 2 and 3 for more information.
- ❑ To prevent an unauthorized user from installing a keyboard or mouse and using them, press the keyboard/ mouse lock button to disable the keyboard and mouse controller. Then lock the front panel door to prevent access to the button. See pages 4-7 and 4-8 for instructions.
- ❑ If you plan to remove your diskette drive and you have installed EISA option cards, you must run the EISA Configuration utility *before* you remove the drive because the utility is contained on the System Configuration diskette. If you want to leave a diskette drive installed, you can secure it by setting a jumper to prevent diskette writes, disabling the controller using the SETUP program, and locking the front panel door that covers the drive. See Chapters 2,3,4, and 6 for more information.

Operating Your Computer from a Remote location

If you want to operate your computer from a remote location, you must redirect your computer's input and output functions to one of the serial ports. To do this, set one of the console redirection options for COM1 or COM2 in either the SETUP program or the EISA Configuration utility. See Chapters 2 and 3 for instructions.

If you need to run the EISA Configuration utility after you have redirected the console, you must include the /B and /M parameters to the SHELL= command line in the CONFIG.SYS file on your System Configuration diskette so you can run the program. The /B (BIOS video output) parameter causes the computer to use BIOS video support routines at interrupt 10H for all video output. The /M (Monochrome display) parameter causes the computer to use monochrome video attributes even when the display is directed to a color monitor.

Chapter 5

Accessing Internal Components

To access your computer's internal components, you need to remove two system covers, the external side cover and the internal main system board cover. If you are going to install an externally accessible device in the external drive bays, you also need to remove the computer's front panel. This chapter describes how to remove and replace these items. Be sure to read the following important safety precautions before you begin.

Special Precautions

- ☐ While this manual provides detailed instructions for installing a variety of optional equipment, do not attempt a procedure if you have any reservations about performing it; ask your dealer or Authorized EPSON Servicer for assistance.
- ☐ Always turn off the computer and then wait at least 30 seconds before you disconnect all cables to the computer and any peripheral devices, and remove the covers. First disconnect the power cord from the electrical outlet and then from the AC inlet on the computer's back panel. Then disconnect all peripheral devices from the computer, including the monitor and keyboard.

Caution

If you do not disconnect the power cable before removing the system cover you can damage your equipment.

- ☐ The computer is heavy, so use caution when you move it.

- ❑ If you are not properly grounded, you could conduct static electricity and damage your equipment. Be sure to ground yourself by touching the inside of the computer's back panel before you touch any of the internal components. Refrain from shifting your feet once you have grounded yourself-it is easy to pick up static electricity from carpeting
- ❑ Do not touch any components except those that this manual instructs you to touch.
- ❑ When disconnecting cables from sockets on the computer's main system board or any devices (such as disk drives), avoid pulling on the cable; grasp the plastic connector to remove it from the socket.
- ❑ When plugging a connector or component into a socket, be sure to position it correctly. Carefully align any holes in the connector with the corresponding pins in the socket before you push in the connector. Otherwise, you can severely damage the equipment.
- ❑ If you install optional equipment in the computer, keep the option's original packing materials in case you need to remove or transport the option later.
- ❑ Always replace the computer's covers *before* you turn on the power or the computer may overheat.

Removing the System Covers

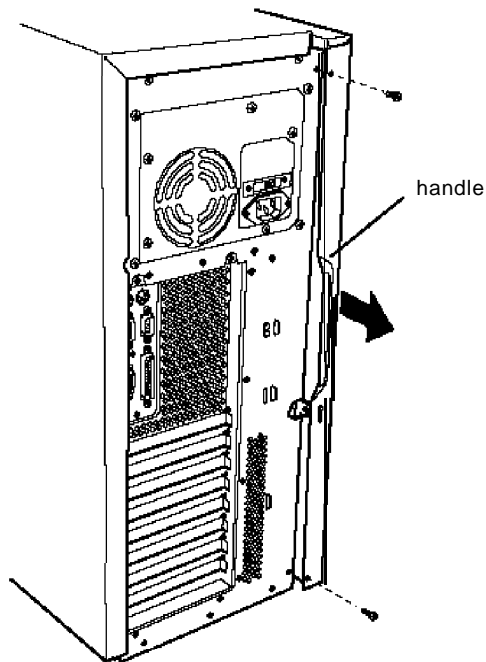
To access your computer's internal components, you need to remove the external side cover and you may also need to remove the internal main system board cover.

Follow the instructions in the sections below to remove the covers as necessary.

Removing the External Side Cover

Follow these steps to remove the external side cover:

1. If you installed a padlock or a cable lock to lock the side cover onto your computer, remove the lock now.
2. The left side of the computer is a cover secured by two screws at the rear of the system, as shown below. Remove these screws and set them aside.



3. Grasp the handle in the back of the cover, shown above, and gently slide the cover toward the back of the system about one inch, until the tabs inside the cover clear the slots in the computer case.
4. Lift the cover away from the computer and set it aside.

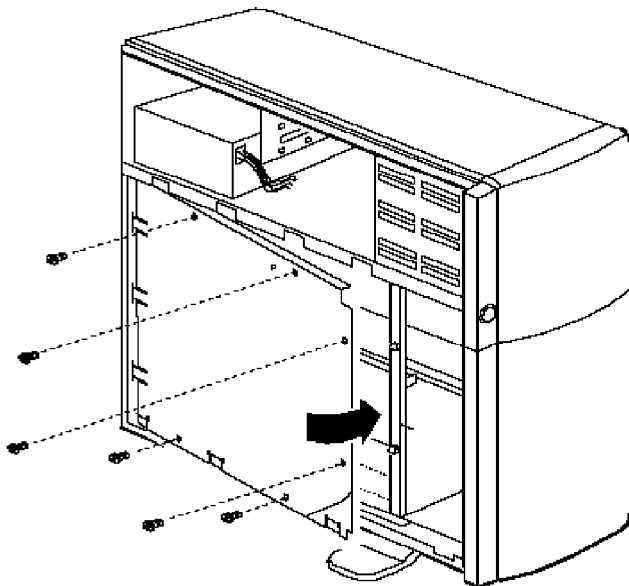
Removing the Internal Main System Board Cover

Once you remove the system's external side cover, you see a metal cover protecting the main system board. You need to remove this cover to access the main system board and to perform such tasks as:

- ☐ Installing or removing option cards
- ☐ Changing jumper settings
- ☐ Installing or removing memory modules
- ☐ Installing or removing drive cables connected to option cards or the main system board.

Follow these steps to remove the main system board cover:

1. Remove the six retaining screws from the cover, as shown below. Then set them aside.



2. Open the cover by pulling it toward you until the curved tabs disengage from the computer's back panel.
3. Lift the cover out of the computer and set it aside.

Replacing the System Covers

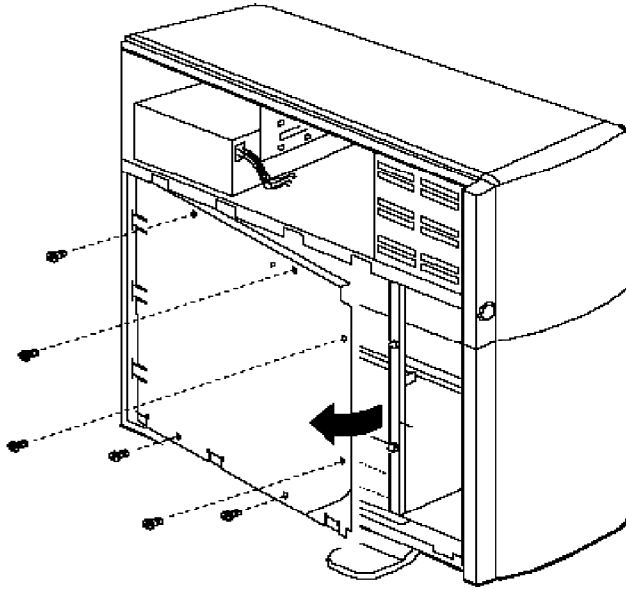
Before replacing the internal main system board cover, make sure you left no tools or loose parts inside the computer case. Also make sure that all spare or loose power and device cables are securely tucked into the space beneath the upper hard disk drive bays or above the lower SCSI drive bays.

Replacing the Internal Main System Board Cover

Follow these steps to replace the main system board cover:

1. Position the cover so the edge containing the three curved tabs points to the left and the edge with the curved rail is at the top.
2. Holding the cover at an approximately 45° angle to the computer, insert the three curved tabs into the three slots in the computer's back panel.

3. Rotate the cover toward the system board and align all six screw holes, as shown below.

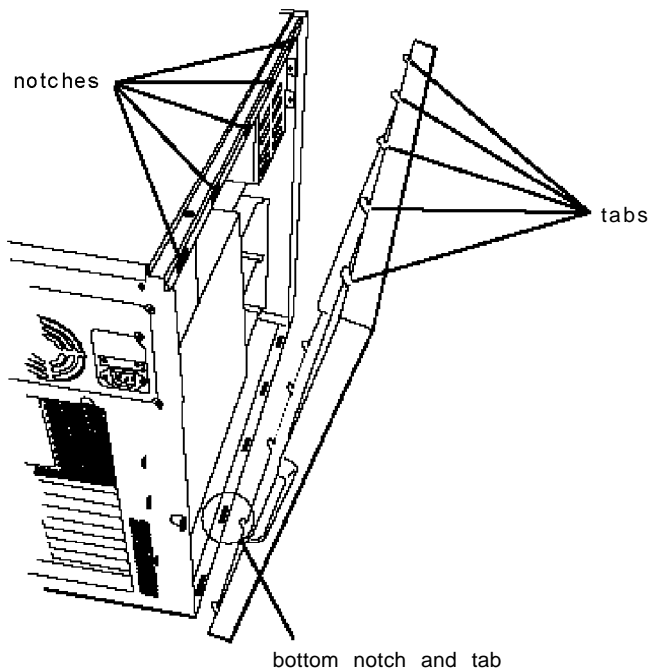


4. Attach the cover to the computer with the six screws you removed earlier.

Replacing the External Side Cover

Follow these steps to replace the external side cover:

1. Position the cover over the computer case so that the edge with the handle protrudes about an inch beyond the back of the computer. Align the tabs at the top and bottom of the cover with the notches in the computer case.

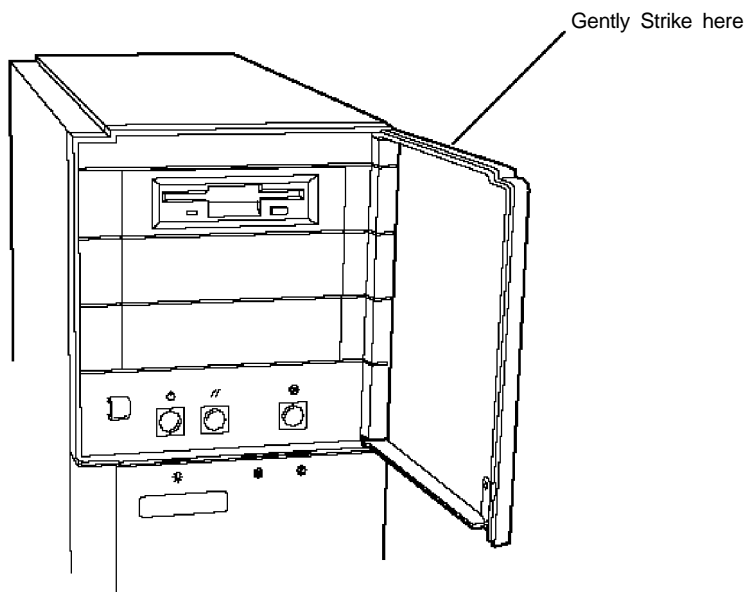


2. Slide the cover toward the front of the system so that the tabs engage in the notches.
3. Replace the two side cover retaining screws you removed earlier.
4. If necessary, replace the padlock or cable lock on the system.

Removing the Front Panel

The upper front panel consists of an inner panel and a door. If you need to install or remove any devices in the external drive bays, you must remove the front panel. Follow these steps:

1. If you locked the front panel door, follow the steps in Chapter 4 to unlock it.
2. Open the front panel door almost all the way.
3. Gently strike the top edge of the door with the palm of your hand to disengage the front panel from the computer.

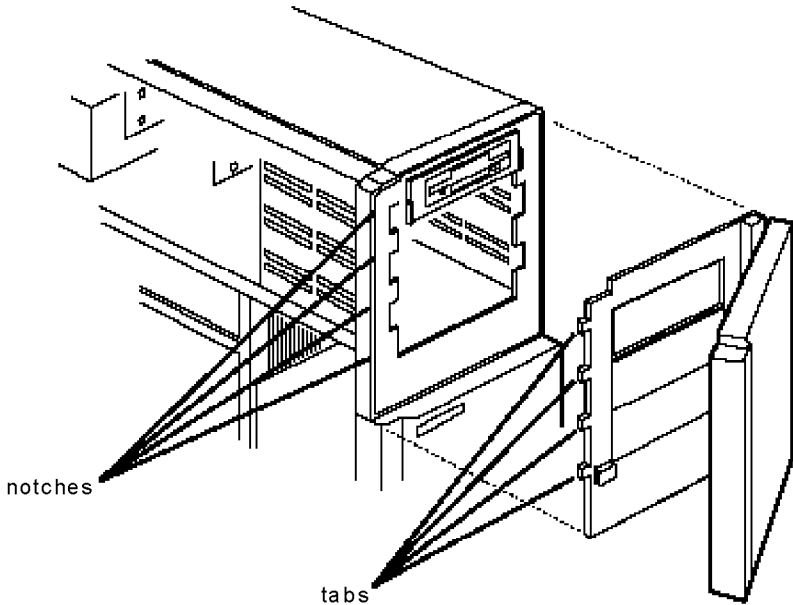


4. Remove the front panel and set it aside.

Replacing the Front Panel

Follow these steps to replace the computer's front panel:

1. Position the front panel so that the four small square tabs on the left side of the inner panel align with the square holes in the left side of the computer case.



2. Push the front panel against the front of the computer.
3. Gently press in on the hinge side of the front panel until it clicks into place.
4. Close the front panel door.

Chapter 6

Installing and Removing Options

This chapter explains how to install and remove the following components:

- ☐ CPU card
- ☐ Option cards
- ☐ Memory modules
- ☐ Video RAM.

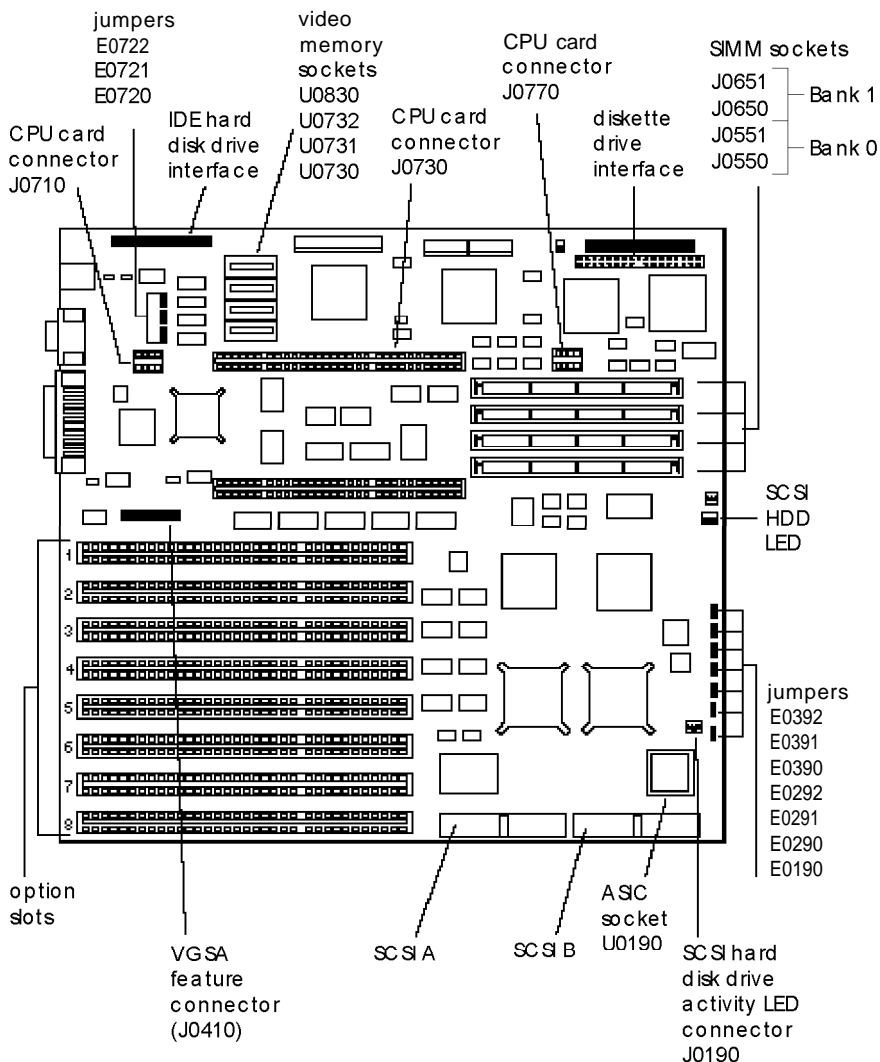
You'll also find instructions for changing the main system board jumper settings and for using the VGA feature connector.

Before you perform any of the steps in this chapter, follow the instructions in Chapter 5 to remove the computer's side cover and the main system board cover.

On the next page, you'll find an illustration of your main system board which shows the location of any components you may need to find.

Main System Board Map

As you follow the instructions in this chapter and in Chapter 7, use the illustration below to locate the necessary components on your main system board.

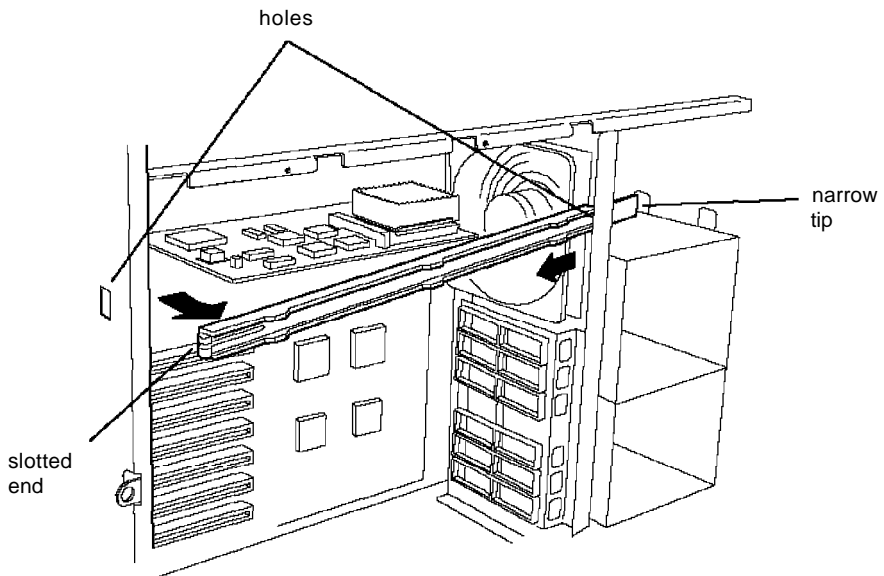


Removing the CPU Card

The CPU card contains your system's microprocessor(s) and cache memory. The card plugs into a proprietary slot on your main system board. You may need to remove your card to replace it with a new card or to access other components on the main system board.

Before you can remove the CPU card, you must first remove the retaining bracket that holds it in place. Follow these steps:

1. Squeeze together the tabs on the slotted end of the retaining bracket that protrudes from the hole in the back of the computer. Slide the bracket toward the front of the computer until the slotted end clears the hole, as shown below.



2. Continue sliding the bracket forward a couple of inches until it stops; then pull the slotted end toward you and to the left until the narrow tip of the bracket comes out of its hole. Set it aside.
3. Carefully pull the CPU card straight out of its connectors on the main system board. Do not rock the card from side-to-side or you will damage the connectors. Be sure not to touch any of the card's components or the gold connectors; handle it only by the edges.

If you are going to replace the CPU chip, see the instructions that came with the upgrade kit.

When you are ready to install the CPU card, follow the steps in the next section.

Installing the CPU Card

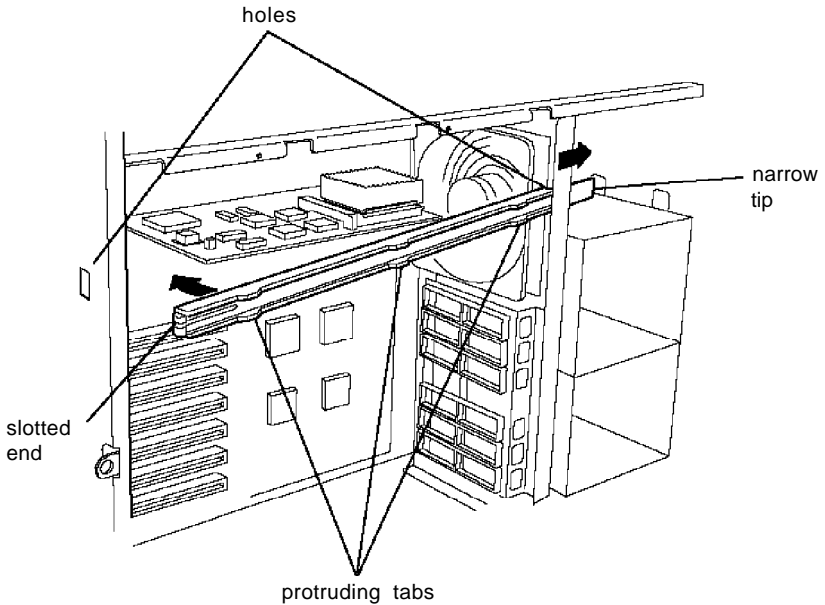
If you are installing a new dual-Pentium CPU card, you must also install the ASIC chip that came with the card on your computer's main system board. See page 6-7 for instructions after you install the card.

Follow these steps to replace the CPU card in your computer:

1. If you are installing a CPU card with two connectors along the bottom, such as the 486DX2/66 card, align the card with connectors J0730 and J0710 on the main system board (shown on page 6-2). Then push the card gently, but firmly, into the connectors.

If you are installing a CPU card with three connectors along the bottom, such as the dual-Pentium 66 card, align the card with connectors J0710, J0730, and J0770.

2. To replace the CPU card retaining bracket, position it so its narrow tip faces the front of the computer and the slotted end points to the rear. Also make sure the side with three protruding tabs faces out, as shown below.



3. Insert the narrow end of the bracket into its hole (as shown above) until it stops.
4. Guide the bracket over the edge of the CPU card and slide the slotted end toward the hole in the back of the computer.
5. Push the slotted end of the bracket into the hole in the back of the computer.

Installing the Dual-Pentium 66 ASIC Chip

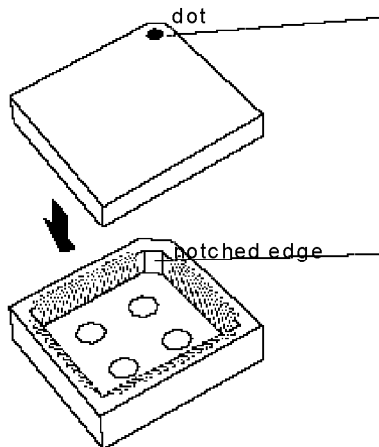
Follow these steps to install the ASIC chip that came with your dual-Pentium 66 CPU card:

1. Locate the ASIC socket on the main system board using the illustration on page 6-2.

Caution

To avoid generating static electricity and damaging the ASIC chip or other components on your main system board, ground yourself by touching the metal surface on the inside of the computer's back panel. Then remain as stationary as possible while you install the chip.

2. Remove the ASIC chip from its package and locate the notched edge of the chip.
3. Align the notched edge of the chip with the notched edge of the socket, as shown below.



4. Carefully push the chip into the socket until it is fully seated.

Installing an Option Card

This section explains how to install an option card in one of your computer's eight EISA bus master expansion slots. It usually does not matter which slot an option card occupies as long as the card fits in the slot. For example, if you have an 8-bit card with an additional tab along the bottom, it will not fit in any of the option slots in your computer.

However, as you design a scheme for any EISA bus master cards you install, keep in mind that these pairs of option slots share EISA bus arbitration requests:

☐ 4 and 5

☐ 6 and 7

☐ 8 and the built-in SCSI controller (viewed as slot 9)

For example, as the EISA bus masters take control of the bus, they do so in this order:

1, 2, 3, 4, 6, 8

1,2,3,5,7, built-in SCSI controller (9)

1,2,3,4,6,8, etc.

Before you install any option cards, see if you need to change any jumper settings on the main system board. See page 6-18 for more information.

Caution

Before you install any option cards, make sure the cards do not exceed the computer's power supply limits described in Appendix B.

If you are installing a high-resolution graphics adapter card that connects to a VGA feature connector, follow the instructions below to install the adapter card; then see “Using the VGA Feature Connector” on page 6-10 to connect the card to the VGA feature connector in your computer.

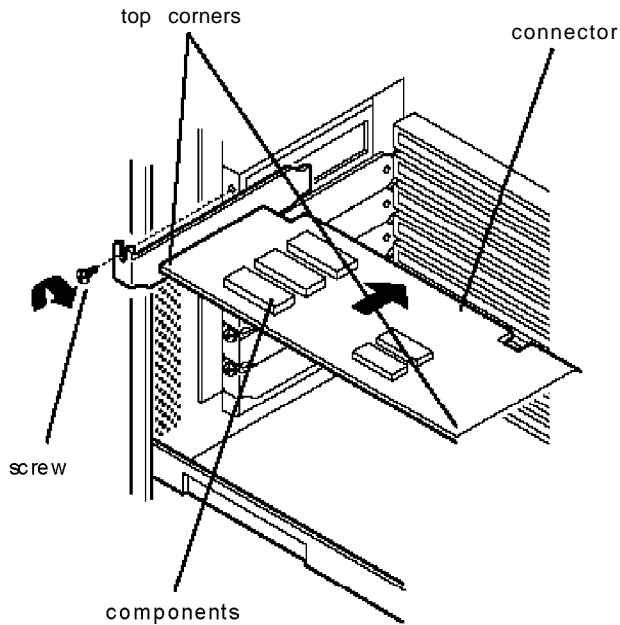
Follow these steps to install an option card:

1. If this is the first time you are installing a card in the option slot, you need to remove the metal cover for that slot. Remove the retaining screw securing the option slot cover to the inside back panel. Keep the screw to secure the option card to the computer.
2. Slide out the slot cover and set it aside. (Store it in a safe place in case you remove the option card later.)
3. Unpack the option card and adjust any switches or jumpers on it, if necessary. (Check the option card instructions.) When you handle the card, be careful not to touch any of its components or the gold connectors. If you need to set it down before you install it, place it gently on top of its original packing material with the component side facing up. Keep the packing materials in case you remove the card later.

Note

You may want to record the card’s serial number in the “Equipment Log” at the end of Chapter 1.

4. Hold the card along the top corners and guide it into the slot, as shown below. (If you are installing a full-length card, insert the front edge of the card into the corresponding guide on the right.)



Once the connectors reach the slot, push the card in firmly (but carefully) to insert it completely. You should feel the card fit into place. If it does not go in smoothly, do not force it; pull it all the way out and try again.

5. Secure the card to the computer with the retaining screw.

Note

If you installed a high-resolution graphics adapter card that connects to a VGA feature connector, see “Using the VGA Feature Connector” on page 6-10 for further instructions.

Removing an Option Card

You may need to remove an option card installed in your computer to access components on the main system board, such as jumpers. You also may want to remove a card if you no longer need it or want to replace it. Follow these steps:

1. Remove the retaining screw that secures the option card to the computer. Then pull the card straight out of its slot.
2. Set the card aside with the component side facing up.
3. If you don't plan to replace the card, check the main system board jumper settings on page 6-18 to see if you need to change any settings.
4. If you will not be reinstalling the card, insert a metal slot cover in the open slot and secure it with the retaining screw you removed from the card.

Using the VGA Feature Connector

The VESA compliant VGA feature connector on your computer's main system board allows you to connect an optional, high-resolution graphics adapter card interface cable. If you want to attach a graphics adapter card cable to the VGA feature connector, follow these steps:

1. Install the graphics adapter card in your system. See "Installing an Option Card" on page 6-7 for instructions.
2. Attach the cable that came with your graphics card to the interface on the card itself. Check your graphics card manual for more information.

3. Attach the other end of the graphics card cable to the VGA feature connector (J0410) on the main system board, shown on page 6-2.

Note

You do not need to change any jumpers to disable the built-in VGA adapter if you connect your graphics adapter card to the feature connector.

Memory Modules

Your computer comes with 8MB of memory installed on two 4MB memory modules on the main system board. By installing additional memory modules, called SIMMs (single inline memory modules), you can increase your computer's memory to 128MB.

There are four SIMM sockets organized in two banks on the main system board. You can install SIMMs with a capacity of 1MB, 2MB, 4MB, 8MB, 16MB, or 32MB. Check the following guidelines to ensure that you choose the correct type of SIMMs and install them properly:

- ☐ Use only 36-bit, tin-plated, fast-page mode, single- or double-sided SIMMs that operate at an access speed of 70 or 80 nanoseconds (ns). You can install 1MB, 2MB, 4MB, or 8MB 80ns SIMMs and 16MB or 32MB 70ns SIMMs.

Caution

Be sure you install only tin-plated SIMMs in your system. Gold-plated SIMMs will corrode when installed in your tin-plated SIMM sockets and damage both the socket and the SIMM.

- ☐ Fill each bank with two SIMMs of the same size.
- ☐ Install SIMMs in Bank 0 first (sockets J0550 and J0551). Then use Bank 1 (sockets J0650 and J0651).

The table below lists some sample memory configurations.

Sample SIMM configurations

Bank 0		Bank 1		Total memory
J0550	J0551	J0650	J0651	
4 MB	4 MB			8 MB
4 MB	4 MB	1 MB	1 MB	10 MB
4 MB	4 MB	4 MB	4 MB	16 MB
8 MB	8 MB			16 MB
8 MB	8 MB	4 MB	4 MB	24 MB
8 MB	8 MB	8 MB	8 MB	32 MB
16 MB	16 MB			32 MB
32 MB	32 MB			64 MB
32 MB	32 MB	16 MB	16 MB	96 MB
32 MB	32 MB	32 MB	32 MB	128 MB

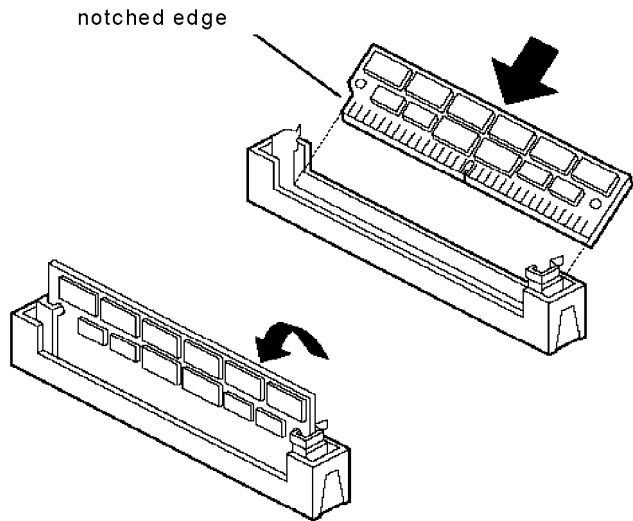
Once you have determined where to add SIMMs, follow the instructions below to install them.

Installing Memory Modules

Refer to the illustration on page 6-2 to locate the SIMM sockets on the main system board.

Follow these steps to install a SIMM:

1. Hold the SIMM so the notched edge faces the computer's back panel and place it in the socket at an upward angle of about 45 degrees relative to the main system board.
2. Push the SIMM into the socket until it is seated firmly. Then tilt it up until it is 90 degrees relative to the main system board and clicks into place, as shown below.



If the SIMM does not go in smoothly, do not force it; gently pull the retaining clips outward, remove the SIMM by its top edge, and start again.

3. Repeat steps 1 and 2 to install any remaining SIMMs, making sure you fill the sockets in the following order: J0550, J0551, J0650, and J0651.
4. If you installed any 16MB or 32MB SIMMs, you must change the settings of jumpers E0391 and/ or E0392 on the main system board. See page 6-18 for more information.

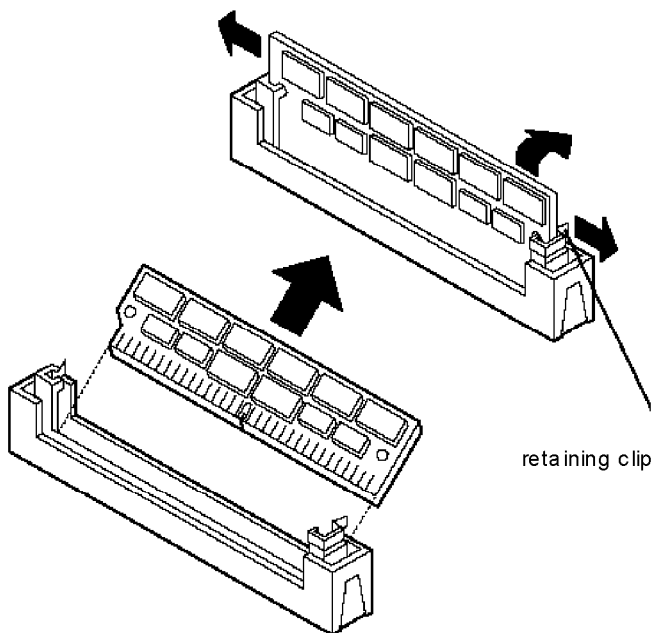
5. The next time you turn on your computer, run the SETUP program or the EISA Configuration utility to enable the computer to recognize the additional memory. For more information, see Chapters 2 and 3.

Removing Memory Modules

If you need to remove memory modules from your computer, follow the steps below. Check the information on page 6-11 to be sure you remove SIMMs from the correct sockets.

If you need to remove SIMMs from your computer, follow the steps below :

1. Gently pull the retaining clips at each end of the SIMM socket away from the SIMM until it tilts outward at a 45 degree angle, as shown below.



Caution

Apply only enough pressure on the retaining clips to release the SIMM; too much pressure can break the plastic retaining clips or damage the socket.

2. Remove the SIMM from the computer and store it in an anti-static package.
3. If you wish to remove additional SIMMs, repeat steps 1 and 2, making sure you empty the sockets in the following order: J0651, J0650, J0550, and J0550.
4. You may need to change the settings of jumpers **E0391** and/or **E0392** on the main system board, depending on the type of SIMMs you removed and the current settings of the jumpers. See page 6-18 for more information.
5. The next time you turn on your computer, run the SETUP program or the EISA Configuration utility to enable the computer to recognize the new amount of memory. For more information, see Chapters 2 and 3.

Adding Video Memory

Your computer comes with 512KB of video memory that you can increase to 1MB by installing four video DRAM DIP (Dual Inline Package) chips. The chips must be 20-pin, 256KB, fast-page mode chips that operate at a 60ns access speed. For the memory to work properly, you must install one chip in each empty video RAM socket on the system board.

Additional video memory is useful for running graphics-intensive applications. It also allows you to display in video resolutions up to 1024 x 768 in 256 colors and in 132-column text modes. See Appendix B for information on supported colors and resolutions for each amount of video memory.

The table below lists the video DRAM DIP chips that are approved for use in your computer.

Video DRAM DIP chip types

Manufacturer	Part number
Hyundai	HY534256AS-60 HY534256ALS-60
Fujitsu	MB81C 4256A-60P
Mosel Vitalic	V53C104FP-60L V53C104FP-60
Samsung	KM44C 256CP-6

Note that your video memory sockets may not look exactly like the ones shown here. If you're not sure how to install video memory chips, contact your EPSON dealer or Authorized EPSON Servicer and ask for assistance.

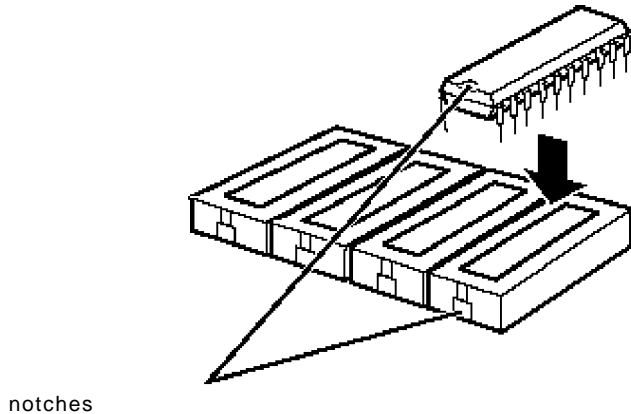
1. Locate the video memory sockets on the main system board, shown on page 6-2.
2. Remove the CPU card so you can access the sockets. See page 6-3 for instructions.

Caution

To avoid generating static electricity and damaging the memory chips, ground yourself by touching the metal surface on the inside of the computer's back panel. Then remain as stationary as possible while you install them.

3. Remove the memory chips from their package and inspect each one. The pins should point inward at slightly less than a 90° angle. If any of the pins are not in this position, use your fingers or small tweezers to gently align them with the other pins. Be careful; the pins are fragile and can break off easily.

4. Position one of the memory chips over the socket as shown below, aligning the pins on the chip with the holes in the socket. Make sure the small notch on the end of the chip aligns with the corresponding notch in the socket.



5. Gently press the chip halfway into the socket (to make sure it is correctly aligned). If the chip does not go in smoothly, remove it and try again.
6. When the chip is properly positioned, push down firmly on both ends to make sure it is well-seated.
7. Repeat steps 4 through 6 for each of the remaining chips.
8. Replace the CPU card. See page 6-4 for instructions.

Setting Main System Board Jumpers

The jumpers on your main system board allow you to control the following computer operations:

- ☐ Recover the system BIOS if it becomes corrupted
- ☐ Enable or disable the built-in video controller
- ☐ Write-protect the diskette drive(s)
- ☐ Set the factory defaults for non-volatile RAM (NVRAM)
- ☐ Enable or disable the password function
- ☐ Set the SIMM sockets to accept standard or high capacity SIMMs
- ☐ Write-protect the configuration information in the FLASH memory
- ☐ Alter the starting video controller base address
- ☐ Set the video memory size

If you need to change any jumper settings, follow the instructions in this section.

The table below lists the jumper settings and their functions.

Main system board jumpersettings

Jumper number	Description	Jumper setting	Function
E0190	FLASH memory	1 to 2* 2 to 3	Normal boot Enables FLASH memory BIOS for recovery operation
E0290	Video controller	1 to 2* 2 to 3	Enables onboard video controller Disables onboard video controller so you can install a video controller on an option card
E0291	Diskette write-protection	1 to 2* 2 to 3	Enables read-write capability (read/write mode) for any diskette drive connected to the built-in controller Enables write-protection (read-only mode) for any diskette drive connected to the built-in controller
E0292	NVRAM	1 to 2* 2 to 3	Normal non-volatile RAM operation Changes EISA configuration or SETUP values stored in non-volatile RAM to their default values
E0390	Password	1 to 2* 2 to 3	Enables power-on password operation Disables and clears the power-on password
E0391	SIMM Bank 0	1 to 2* 2 to 3	1MB, 2MB, 4MB, or 8MB SIMMs are installed in Bank 0 16MB or 32MB SIMMs are installed in Bank 0
E0392	SIMM Bank 1	1 to 2* 2 to 3	1MB, 2MB, 4MB, or 8MB SIMMs are installed in Bank 1 16MB or 32MB SIMMs are installed in Bank 1

Main system board jumper settings (continued)

Jumper number	Description	Jumper setting	Function
E0720	Video memory size	1 to 2* 2 to 3	512KB of video memory 1MB of video memory installed
E0721	FLASH memory write protection	1 to 2* 2 to 3	Enables writes to FLASH memory using the EISA Configuration utility or the SETUP program Disables writes to FLASH memory
E0722	Video controller base address	1 to 2* 2 to 3	Moves video controller starting address to 03C3H if you installed a card or application program that uses address 046E8H Starting video controller address is 046E6H

* Default setting

Refer to the illustration on page 6-2 to locate the jumpers on the main system board. If there are any option cards installed in your computer that block your access to the jumpers, remove them following the instructions on page 6-10. Then change any jumper settings as needed.

Chapter 7

Installing and Removing Disk Drives

The instructions in this chapter describe how to install and remove optional drives in your computer. You can use these instructions to install a variety of devices, including diskette drives, hard disk drives, SCSI drives, tape drives, and CD-ROM drives.

Although your drive may look different from the ones illustrated here, you should be able to install it the same way. Some of the steps in this chapter may not apply; see the documentation that came with your drive for more information.

This chapter describes how to do the following:

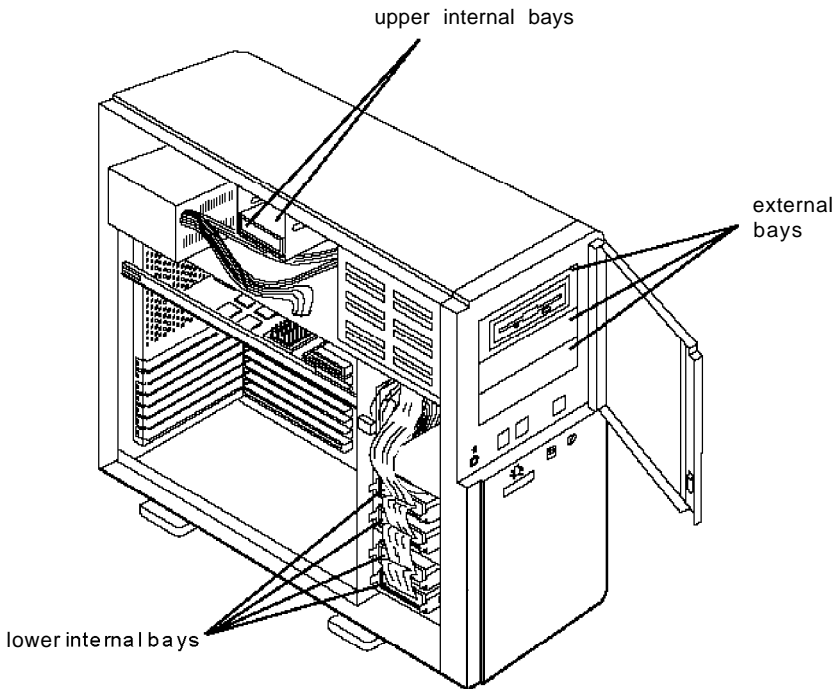
- ☐ Use the correct drive bay
- ☐ Install and remove an externally accessible drive
- ☐ Install and remove an IDE hard disk drive
- ☐ Install and remove a SCSI drive.

Before you perform any of the procedures described below, follow the steps in Chapter 5 to remove the system covers and the front panel, if necessary.

Using the Correct Drive Bay

Your computer contains nine bays that allow you to install various drive types in the following configurations:

- ❑ Three externally accessible bays for mounting half-height 3.5-inch or 5.25-inch drives that use removable media. The system comes with a 3.5-inch diskette drive installed in the top external bay.
- ❑ Four lower internal bays for mounting either four half-height or two full-height 3.5-inch SCSI drives.
- ❑ Two upper internal bays for mounting either two half-height or one full-height 3.5-inch IDE hard disk drives. You can also mount two half-height or one full-height 3.5-inch SCSI drives in these bays.



If you are installing a hard disk, it is best to install it in an internal drive bay. This reserves the external bays for any externally accessible drives you may want to add later.

Note

Installing a hard disk drive in an externally accessible bay is not recommended because the drive can generate excess electromagnetic interference.

You can install 5.25-inch drives or 3.5-inch drives with 5.25-inch mounting frames attached in the external bays. See the manual that came with your drive(s) for instructions on attaching the mounting frames, if they are not already attached.

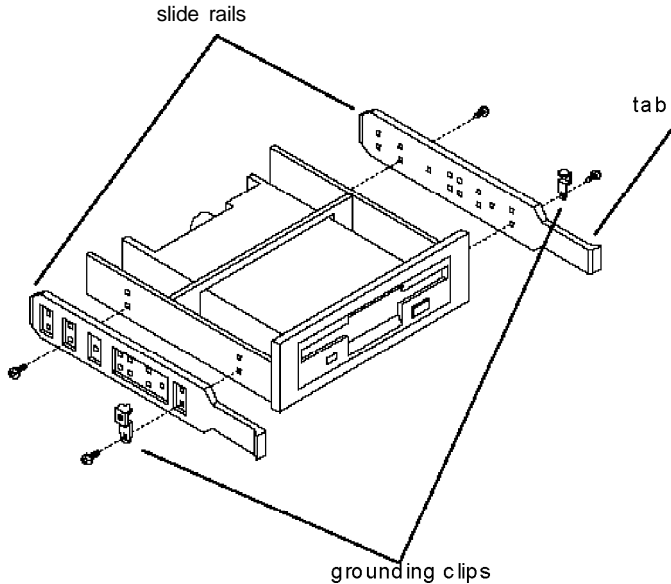
Installing a Drive in an External Bay

This section describes how to install a diskette drive or other externally accessible device in the external bays. Although the illustrations in this section show a diskette drive being installed in the upper bay, the installation procedures apply to any type of drive you choose to install in any of the external bays.

Before you begin, locate two slide rails (one labeled A on the side and one labeled B) and two grounding clips for each drive you are installing. These items came in the box with your computer. Also locate four screws for each drive; these are supplied by your drive manufacturer.

1. Remove the drive from its protective wrapper and place it on an anti-static surface. Record the drive model and serial number in the "Equipment Log" on page 1-12.
2. Set any drive jumpers or switches according to the manufacturer's instructions.

3. Using two screws and the grounding clip, attach plastic slide rail B to the left side of the drive and slide rail A to the right side of the drive. Position each slide rail so its narrow end is at the front of the drive with its tab facing outward, as shown below. Then install a grounding clip on each side under the two screws nearest the front of the drive.



4. If you have not already done so, remove the front panel from the system as described in Chapter 5.
5. If you are reinstalling the first drive, locate the two-wire power cable (F6) attached to connector F5.

If you are installing a second or third drive, locate either the small (P13) or large (P4) four-wire power cable connector, as appropriate for your drive's power socket.

Pull the appropriate cable forward out of the external bay so you can attach it to the connector on the back of the drive.

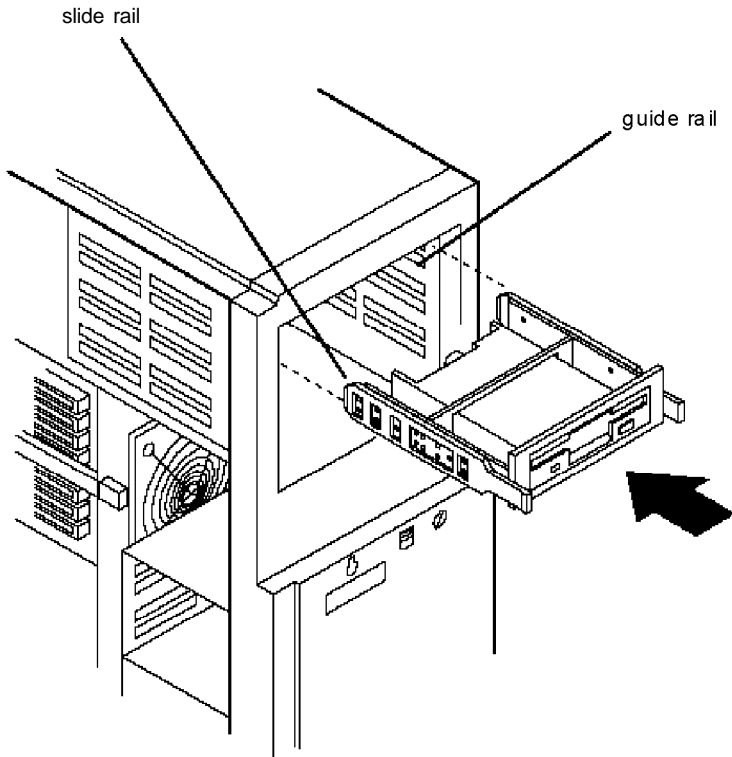
6. Hold the drive in front of the system and connect the power cable to the drive. Position the cable connector so that its holes fit over all the pins in the drive and then push in the connector.
7. While holding the drive in front of the system, connect the appropriate ribbon cable to the drive, as described below.

If you are reinstalling a diskette drive in the top external bay, use ribbon cable P3. Notice the small tab in the middle of the cable connector; align this tab with the notch in the drive's ribbon cable socket. Make sure the holes in the cable connector fit over all the pins in the socket; then push in the connector.

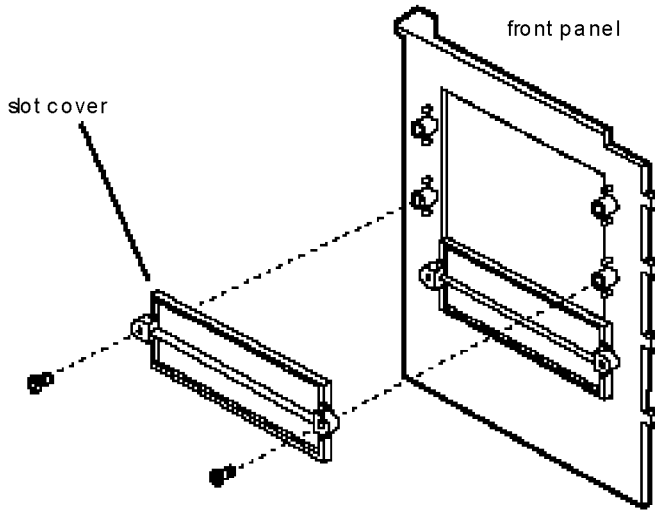
If you are installing a second diskette drive or other device, use ribbon cable P2. Align the slot in the cable connector with the gap in the drive's ribbon cable socket; then push in the connector.

If you are installing a third drive, use the appropriate ribbon cable that attaches to your drive's controller. Then connect it as described in your drive documentation.

8. Position the drive so that the plastic slide rails on each side fit between the guide rails inside the drive bay, as shown below. Then push the drive into the bay until the slide rails lock in place.



9. If you installed a device that uses removable media, such as a diskette drive, you need to remove the appropriate slot cover from the computer's front panel. Remove the two screws that secure the slot cover to the inside of the front panel, as shown below. Then remove the slot cover and store it in a safe place.



10. Replace the front panel as described in Chapter 5

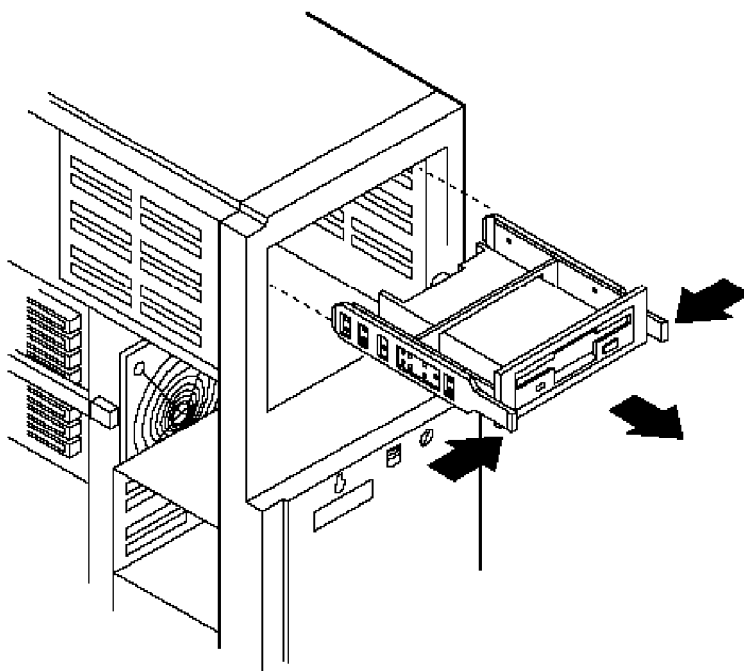
Note

Once you have reassembled the computer, you need to run the SETUP program or the EISA Configuration utility to configure the system for a diskette drive or other device. For information, see Chapters 2 and 3.

Removing a Drive from an External Bay

Follow these steps to remove a drive from an external bay:

1. If you have not already done so, remove the front panel from the system as described in Chapter 5.
2. Notice the tabs on the end of the slide rails attached to each side of the drive. To release the drive, press both tabs in toward the drive and pull the drive partially out of the bay.



3. While holding the drive in front of the system, disconnect the power and ribbon cables attached to the drive. Grasp the cable connector and pull it straight out from the drive so you do not damage the connector; do not pull on the cables.
4. If necessary, remove the slide rails and grounding clips from the drive. Set them and the screws aside for safekeeping.
5. Replace the front panel slot cover, if necessary.
6. Replace the front panel as described in Chapter 5.

Note

Once you have reassembled the computer, you need to run the SETUP program or the EISA Configuration utility to inform the system that a diskette drive or other device is removed. For information, see Chapters 2 and 3.

Installing and Removing an IDE Hard Disk Drive

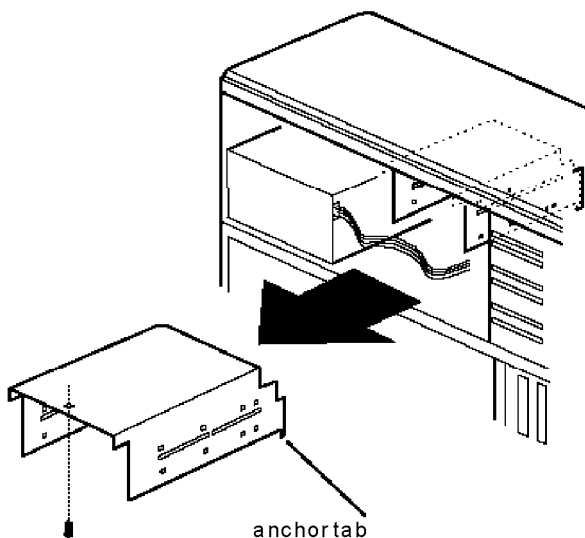
Your computer supports up to two IDE hard disk drives, which can be installed in the upper internal drive bays. Before you install a new IDE drive, be sure to check the drive's documentation for the correct jumper settings for the drive. If you are installing your second drive, you may also need to change the jumper settings on the drive installed in your system to indicate which drive is the primary (master) drive and which is the secondary (slave) drive.

Now follow the steps in the next section to remove the IDE drive bay assembly.

Removing the IDE Drive Bay Assembly

Follow these steps to remove the IDE drive bay assembly:

1. Remove any cables that are connected to any drives already installed in the IDE drive bay assembly.
2. While supporting the IDE drive bay assembly, remove the screw that attaches it to the computer case at the top of the bay, as shown below.



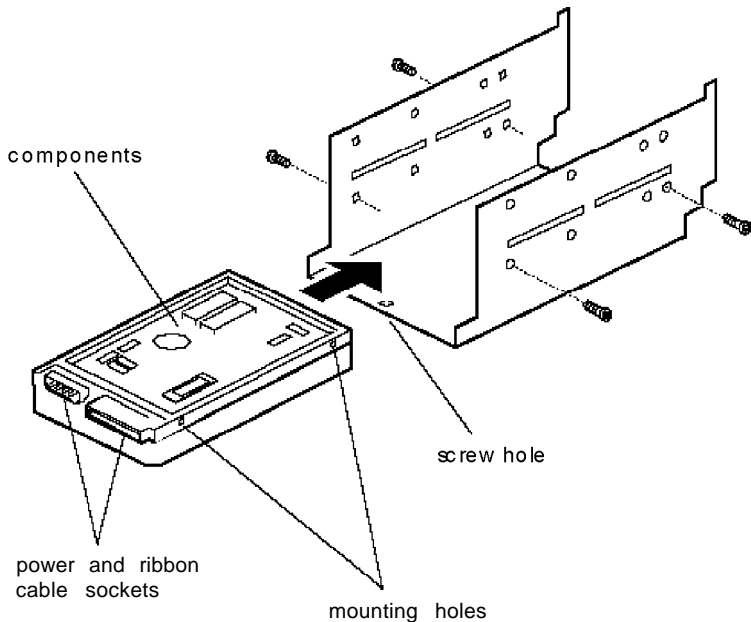
3. The other end of the drive bay assembly is secured to the computer by two anchor tabs inserted into slots in the side wall. To disengage the tabs, slightly lower the end of the assembly nearest you and lift up on the end next to the side wall. Then lift the assembly out of the computer, and place it on an anti-static surface

Now follow the instructions in the appropriate section below to install or remove an IDE drive.

Installing an IDE Drive

If you are installing a half-height IDE hard disk drive, you can install it in either the top or bottom bay. If you are installing a full-height IDE drive, you must first remove any half-height drives from the drive bay assembly so the full-height drive can use both bays. The figures in this section illustrate a half-height IDE drive installation.

1. Turn the drive bay assembly over and install the drive so that the component side is facing up, as shown below. Make sure the ribbon and power cable sockets are at the end of assembly with the screw hole.



2. Align the two mounting holes in each side of the drive with the two holes in each side of the drive bay assembly. Then insert the four screws that came with the drive, as shown above.

Caution

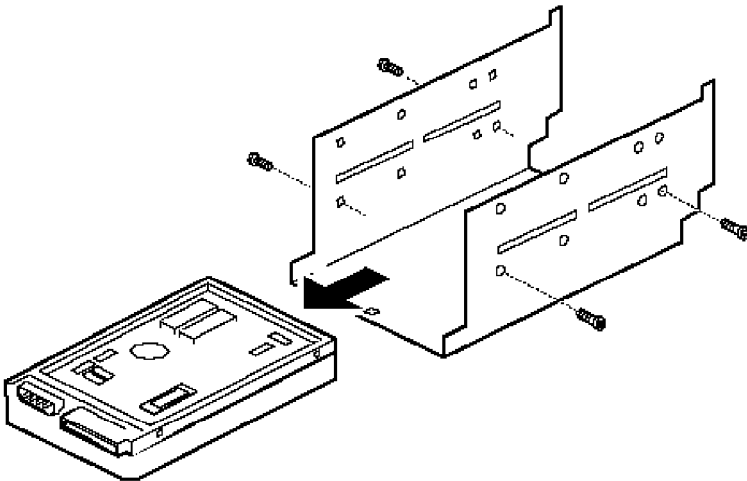
If you are installing a second drive in the drive bay assembly, be careful not to scrape or damage the components on the installed drive.

3. If you need to install a second IDE hard disk drive, repeat step 2.
4. Follow the instructions on page 7-13 to replace the IDE drive bay assembly.

Removing an IDE Drive

Follow these steps to remove a hard disk drive from the IDE drive bay assembly:

1. Remove the four screws that attach the drive to the assembly. Be sure to support the drive as you loosen the screws so it does not damage any other drive you have installed.

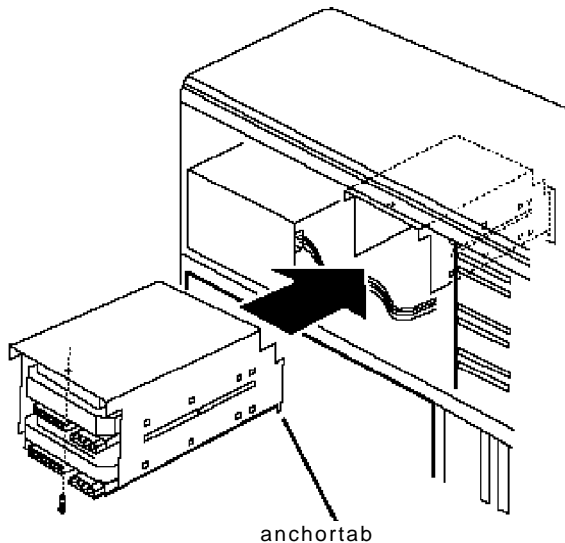


2. Remove the drive from the bay and place it on an anti-static surface.
3. If you are removing one IDE drive but leaving another in the system, you need to change the jumper settings on the remaining drive. See the documentation that came with your drive for instructions on changing the jumpers.
4. Replace the IDE drive bay assembly as described below.

Replacing the IDE Drive Bay Assembly

Follow these steps to replace the IDE drive bay assembly:

1. Position the assembly so the components on the drive(s) face down and the screw hole in the assembly faces up.
2. Insert the anchor tabs on the back of the assembly into the slots in the computer's side wall, as shown below.

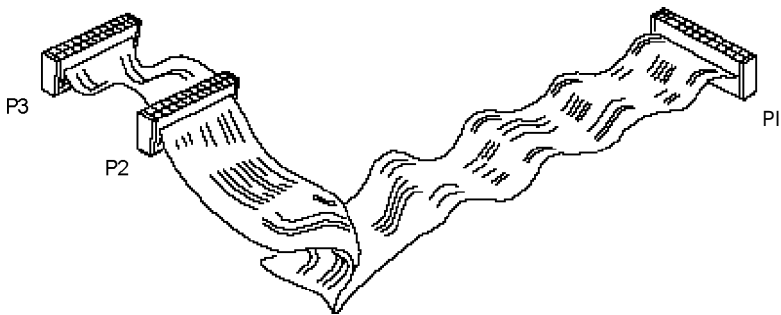


3. Lift up the front end of the assembly and attach it to the top of the computer case with the screw you removed earlier.
4. Connect the ribbon and power cables as described in the next section.

Connecting the IDE Ribbon and Power Cables

This section explains how to connect ribbon and power cables to your IDE drive(s). The ribbon cable transmits data and the power cable carries electric current to the IDE device.

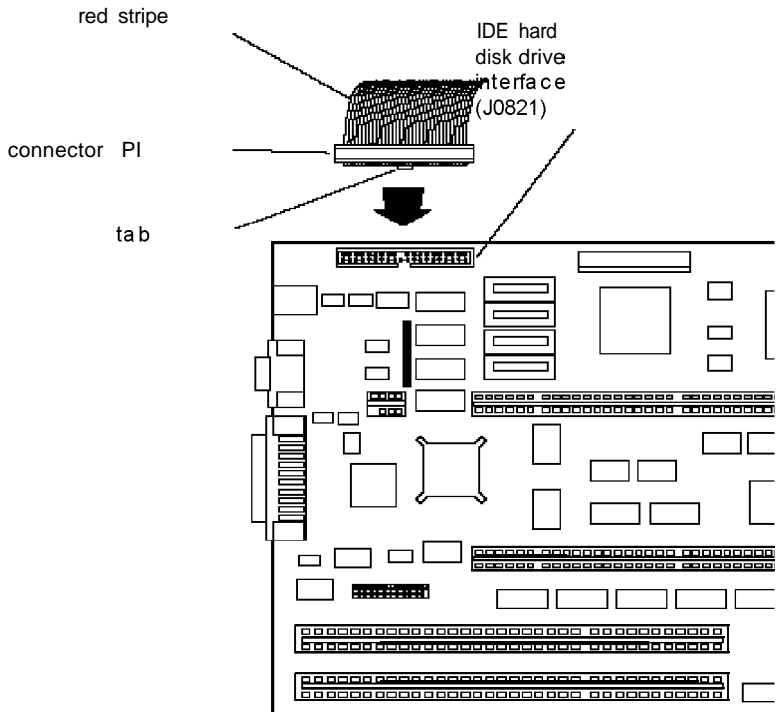
The IDE ribbon cable includes three connectors: P1, P2, and P3. P1 connects to the main system board, and P2 and P3 connect to the IDE drives.



If your system came with an IDE hard disk drive, this cable is already installed. If so, follow the steps below to connect the cable to the drive beginning with step 3.

If your system did not come with an IDE drive already installed, the ribbon cable came in the box with your computer and you must first connect it to the computer's main system board. Follow the steps below beginning with step 1.

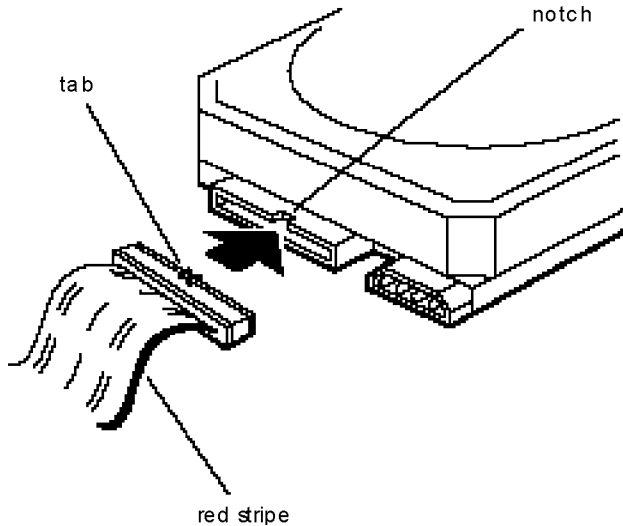
1. Connect P1 of the IDE ribbon cable to the IDE interface, J0821, on the main system board. Position the tab on connector P1 so it faces down and be sure the red stripe on the ribbon cable faces the computer's back panel.



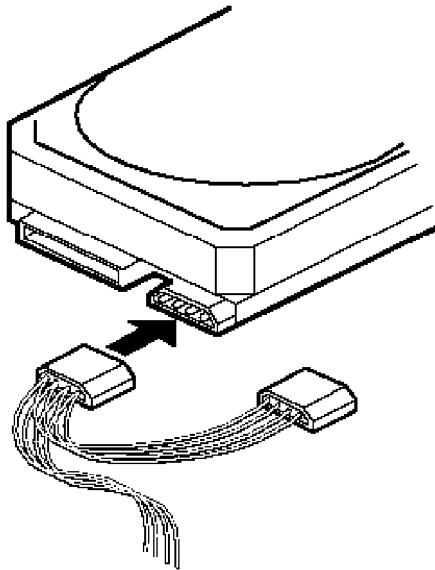
2. Route the cable up through the cutout in the rear of the metal panel beneath the IDE drive bay assembly. (The diskette drive cable is also routed through this cutout.)

3. Connect P3 of the IDE ribbon cable to the drive in the top half of the drive bay assembly. Connect P2 of the IDE ribbon cable to the drive in the lower half of the drive bay assembly. (If you installed only one drive, connect P3 of the IDE ribbon cable to the drive.)

Align the tab on the connector with the notch in the drive's socket. Be sure the red stripe on the IDE ribbon cable faces the computer's front panel.



4. Connect power cable P7 to the power socket of the drive in the top half of the drive bay assembly. Connect power cable F6 to the drive in the lower half of the drive bay assembly. (If you installed only one drive, connect either P6 or P7; it does not matter which one.) Be sure to position the connector so that its notched corners line up with the notched corners of the socket on the drive. Make sure the holes fit over all the pins and then push in the connector.



5. Curl up any spare cables and tuck them in the space beneath the IDE drive bay assembly.

Note

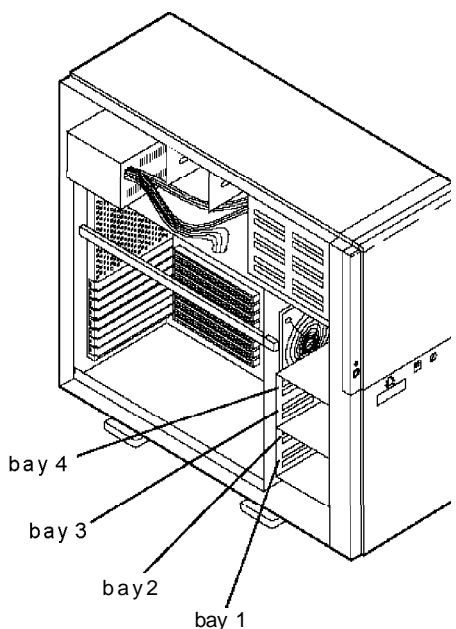
Once you have reassembled the computer, you need to run the SETUP program or the EISA Configuration utility to configure the system for your IDE hard disk drive. For information, see Chapters 2 and 3.

Installing a SCSI Drive

Your computer supports a variety of single-ended SCSI devices. If you plan to install one to four SCSI drives, use only the SCSI (lower) internal bays. If you plan to install more than four, you can install the fifth and sixth drives in the upper internal bays or in the external drive bays, if the drives use removable media.

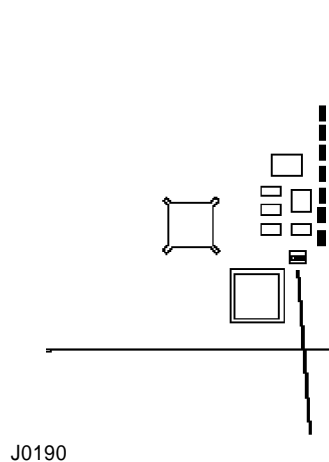
Before you begin, locate two slide rails and two grounding clips for each drive you will install. These items came in the box with your computer. Also locate four screws for each drive; these are supplied by your drive manufacturer.

If you plan to install four SCSI drives in the lower internal bays, install them in the following order: bays 1, 2, 3, and 4, as shown below. However, if you are installing fewer than four SCSI drives, begin with bay 4 and work down. This optimizes cooling and airflow inside your computer.



Follow the steps below to install the SCSI drive(s) in your computer. If you are using the internal SCSI subsystem, start with step 4 below. If you plan to install an external SCSI adapter card, start with step 1.

1. Follow the instructions in your SCSI adapter documentation to set any jumpers or switches on the adapter card. Then see “Installing an Option Card” in Chapter 6 for instructions on installing the adapter in your computer. You may want to use option slot 8 so the SCSI device cable can reach the adapter easily.
2. Connect P3 of the SCSI hard disk drive activity LED cable that came with your computer to interface J0190, located at the lower right of the main system board, as shown below.



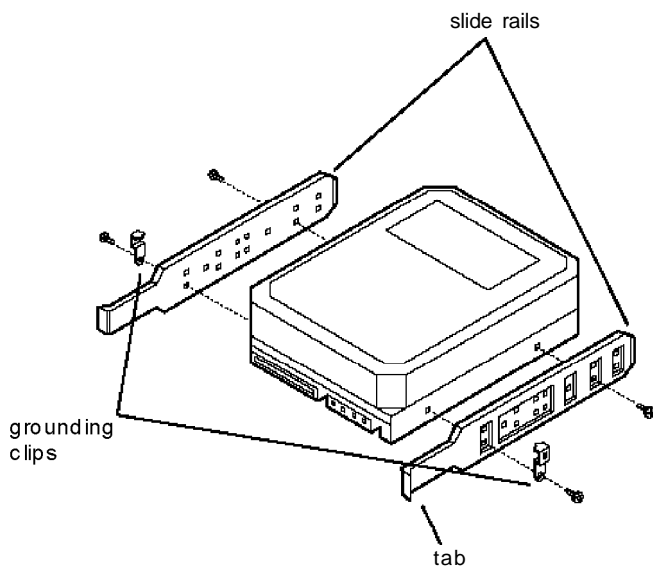
3. Connect P1 on the other end of the LED cable to the appropriate connector on your SCSI adapter. If you installed two SCSI adapters, remove the plastic tie joining P1 and P2; then connect P2 to the other SCSI adapter.
4. Remove the SCSI drive from its protective wrapper and place it on an anti-static surface.

5. Record the drive's model, serial, and SCSI ID number in the "Equipment Log" on page 1-12.
6. Follow the instructions in the SCSI drive's documentation to set any jumpers or switches on the drive and to install or remove the terminating resistors.

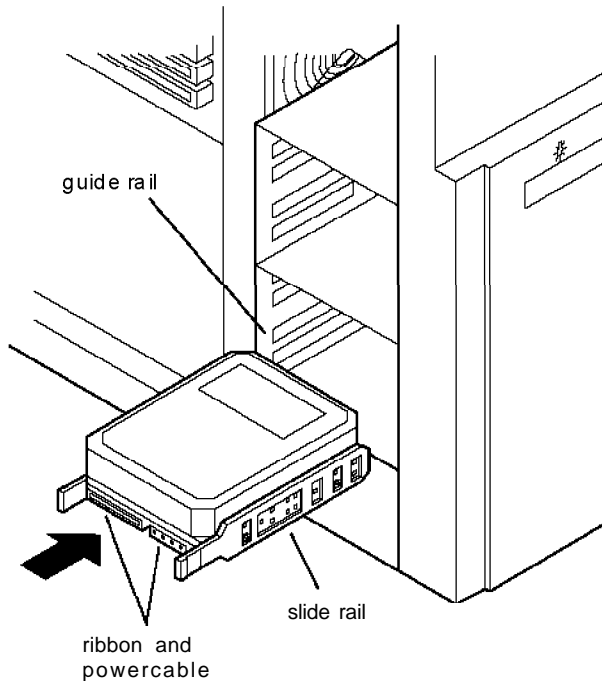
Note

Do not remove terminating resistors from the SCSI device you install at the end of the ribbon cable. The last device on the cable terminates the SCSI bus and must have terminating resistors installed.

7. Using two screws and a grounding clip, attach plastic slide rail A to the right side of the drive; then use two screws and a grounding clip to attach slide rail B to the left side. Position each slide rail so its narrow end is at the socket end of the drive with its tab facing outward, as shown below. Then install a grounding clip under each of the two screws nearest the narrow end of the slide rails.



8. Position the drive in the bay so the components face down and the ribbon and power sockets face outward. Align each plastic slide rail with the guide rails inside the bay you plan to use; then slide the drive into the bay until the slide rails lock in place, as shown below.



9. Repeat steps 4 through 8 to install any other SCSI drives in the lower drive bays.

If you installed four or fewer drives, go to the next section.

If you need to install a fifth or sixth SCSI drive in the upper internal bays, follow the instructions on page 7-10 to remove the IDE drive bay assembly. Then return to page 7-22 for instructions on connecting the ribbon and power cables to your drive(s).

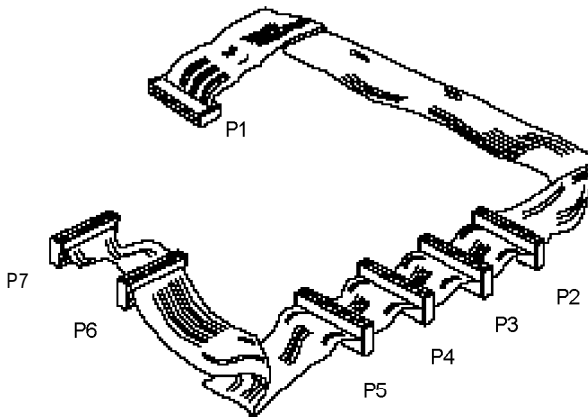
To install a fifth or sixth SCSI drive in the upper external bays, follow the instructions on page 7-3. Then return to this page for instructions on connecting the SCSI ribbon and power cables to your drive(s).

Installing the SCSI Ribbon and Power Cables

This section explains how to connect SCSI ribbon and power cables to your SCSI drive(s). The ribbon cable transmits data and the power cable carries electric current to the SCSI device.

Installing the SCSI ribbon cable

The SCSI ribbon cable has seven connectors: P1, P2 F3, P4, P5, P6, and P7, as shown below.



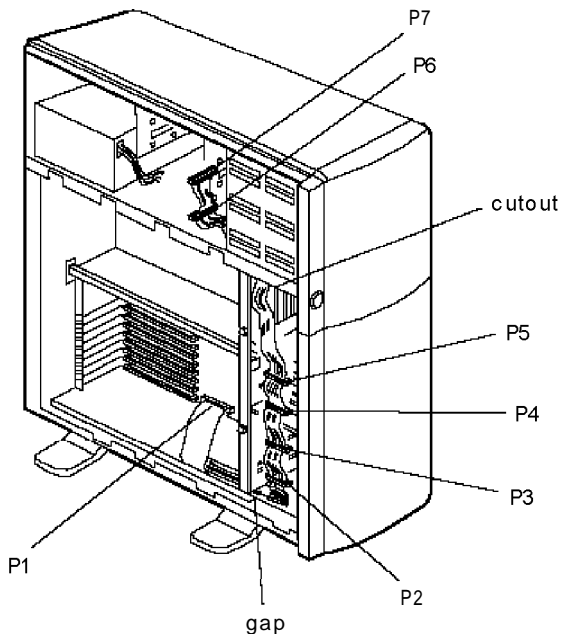
Note

The SCSI ribbon cable is designed so you can easily connect up to six SCSI devices. You can attach the middle connectors (P2 through P6) to any SCSI drive. However, you must attach P7 (the last connector on the ribbon) to the SCSI device you have defined as the last device on the bus.

If your system came with a SCSI drive, this cable is already connected inside your computer. If your computer did not come with a SCSI drive installed, this cable came in the box with your computer.

Follow the steps below to connect the SCSI ribbon cable to your system board and drives. If at least one SCSI drive is installed, begin with step 3.

1. Connect **P1** of the SCSI ribbon cable to the SCSI A socket on the main system board.
2. To route the cable to the first drive, guide the cable into the gap between the lower SCSI drive bays and the bottom of the computer, as shown below.



3. Choose a connector for each SCSI drive you have installed. Align the tab on the connector with the notch in the drive socket. Make sure the holes fit over all the pins, and then push in the connector.

If you are installing up to four SCSI drives, be sure to use P7 for the last drive on the bus. Then proceed to “Installing the SCSI power cables” on page 7-25.

If you are installing five or six SCSI drives, continue with the next step.

4. There is a cutout beneath the external bays and above drive bay 4, as shown in the previous illustration. Insert the section of the cable that contains connectors P6 and P7 through this cutout. Make sure the red stripe on the cable faces the outside of the computer and that connectors P6 and P7 are behind the external drive bays.

Note

If you have difficulty routing the cable beneath the external drive bays, you may want to remove the device installed in the lowest external bay before inserting the cable into the cutout. See “Removing a Drive from an External Bay” on page 7-8 for instructions.

5. Connect P6 or P7 of the SCSI ribbon cable to the SCSI device that you installed in either the IDE drive bay or the external drive bay. Be sure to connect P7 of the SCSI ribbon cable to your last SCSI device.

Now follow the instructions in the next section to connect the power cables.

Installing the SCSI power cables

Follow these steps to connect power cables to your SCSI drive(s):

1. You can use **P8, P9, P10, or P11** to provide power to any drives you have installed in the lower internal drive bays.

Position the power cable connector so that its notched corners line up with the notched corners of the power socket on the drive. Make sure the holes fit over all the pins and then push in the connector.

2. Connect a power cable to each of the remaining drives in the lower drive bays in the same manner.
3. If you installed a fifth or sixth SCSI drive in either the upper internal bays or the external bay, connect power cables P6 and P7 to these drives.

Now see your SCSI drive documentation for instructions on installing your SCSI drivers.

Removing a SCSI Drive

Before you remove any SCSI drive(s), check your SCSI drive documentation for instructions on resetting the switches or jumpers on your remaining drives and changing your terminating resistors. Then follow these steps to remove the drive(s) from your computer:

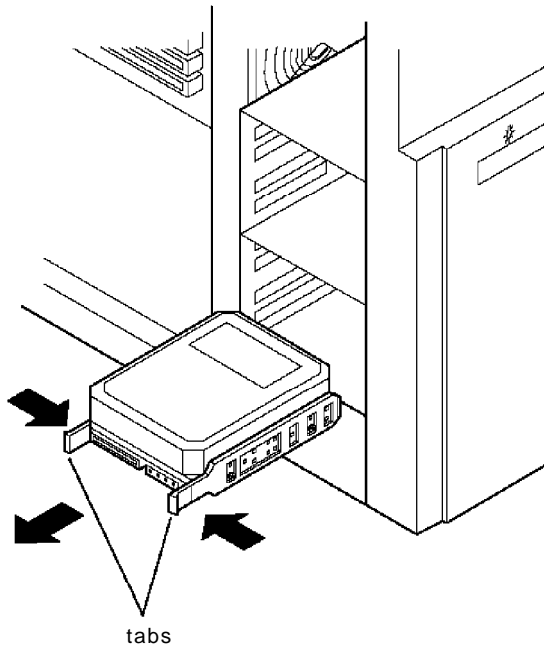
1. Disconnect the SCSI ribbon cable connector from the drive. Grasp the pull tab and pull the connector straight out from the socket so you do not bend the pins; do not pull on the cable.

Note

If you removed the last device from your SCSI bus, be sure to reconnect ribbon cable connector P7 to the SCSI device that will now be the last device on the SCSI bus.

2. Disconnect the power cable from the power socket on the drive.
3. To remove a SCSI drive from the upper internal drive bay, first follow the steps on page 7-10 to remove the IDE drive bay assembly.

To remove a SCSI drive from either an external bay or a lower internal bay, first notice the tab on the end of each slide rail attached to the drive. To release the drive, press the tabs in toward the drive; then carefully pull the drive out of the bay, as shown below.



4. If necessary, remove the four screws, two grounding clips, and two slide rails from the drive and save them.
5. Repeat steps 1 through 4 for each drive you need to remove.
6. If you removed your only SCSI device(s), disconnect **PI** of the ribbon cable from the system board.

Also check your SCSI drive documentation for any other steps you may need to perform.

Appendix A

Troubleshooting

If you have any problems as you set up and use your computer, refer to this chapter. You can correct most problems by adjusting a cable connection, repeating a software procedure, or resetting the computer.

The troubleshooting suggestions in this chapter are organized in general categories, such as “The computer will not start.” Within each category, a more specific problem is described with possible solutions.

If the suggestions here do not solve the problem, contact your EPSON dealer or Authorized EPSON Servicer.

Identifying Your System

When you request technical assistance, be ready to provide the serial number of your computer, its system BIOS version number, its configuration (including the type of disk drives, monitor, and option cards), and the names and version numbers of any software programs you are using. You may have listed some of this information in the “Equipment Log” at the end of Chapter 1.

Use these guidelines to locate information about your system :

Serial number:	Look on the back panel of the computer to find the serial number.
System BIOS version:	Restart your system. You'll see the system BIOS version number displayed on the screen during power-on diagnostics.
System configuration:	Run SETUP or the EISA Configuration utility to view your system configuration information.
MS-DOS version:	At the MS-DOS prompt, type VER and press Enter to see the MS-DOS version number.
Software versions:	In Windows applications, select About from the Help menu. As your software application starts, it usually displays a version number on the banner screen. Also, you can check your software manual.
CONFIG.SYS:	At the MS-DOS prompt, type TYPE C:\CONFIG.SYS and press Enter to see a listing of your CONFIG.SYS file, which contains system configuration commands.
AUTOEXEC.BAT:	At the MS-DOS prompt, type TYPE C:\AUTOEXEC.BAT and press Enter to see a listing of your AUTOEXEC.BAT file, which contains system startup commands.

error Messages

Your computer's built-in memory (ROM) contains a series of diagnostic programs, called power-on diagnostics. These programs check internal devices such as ROM, RAM, the timer, the keyboard controller, and the hard disk drive every time you turn on the computer or press the reset button. The RAM test program displays a count of the memory currently installed in your system.

If the computer finds an error, it reports one of the following types of error messages:

- ☐ Power-on diagnostic and boot error messages
- ☐ Error tone codes for fatal errors (conditions that lock up the system)
- ☐ Error tone codes for non-fatal errors (conditions that do not lock up the system).

Be sure to write down the error message or tone code pattern and give the information to your dealer or servicer when you report a problem. These error messages are described below.

Power-on Diagnostic and Boot Errors

When the power-on diagnostic tests detect an error, the computer displays a message on the screen (as described below) and the speaker beeps twice. If the error occurs before the computer initializes the video display, the speaker sounds a series of beeps (described in the next section).

Each error is identified by a message number and a countdown number which the computer uses as it executes the test associated with the error.

The table below lists the power-on diagnostic and boot error messages, and some basic solutions to the problems. Check the appropriate section(s) in this appendix for other solutions.

Power-on diagnostic and boot error messages

Countdown number	Error message number	Message	Solution
840		Start of power-on diagnostics	Not an error
830		CPU register test	Not an error
820		8742 Initialization	Not an error
810	810	Real-time clock RAM and register test failure	Contact your dealer or servicer
800	800	System BIOS checksum test failure	Contact your dealer or servicer
790	790	Programmable interval timer failure	Contact your dealer or servicer
780	780	DMA channel failure	Contact your dealer or servicer
770	770	DMA page register test failure	Contact your dealer or servicer
760	760	RAM refresh failure	Contact your dealer or servicer
740	740	First 64KB RAM chip or data line failure—bit 0	Contact your dealer or servicer
	741	First 64KB RAM chip or data line failure—bit 1	Contact your dealer or servicer
	742	First 64KB RAM chip or data line failure—bit 2	Contact your dealer or servicer
	743	First 64KB RAM chip or data line failure—bit 3	Contact your dealer or servicer
	744	First 64KB RAM chip or data line failure—bit 4	Contact your dealer or servicer

Power-on diagnostic and boot error messages (continued)

Countdown number	Error message number	Message	Solution
	745	First 64KB RAM chip or data line failure-bit 5	Contact your dealer or Servicer
	746	First 64KB RAM chip or data line failure-bit 6	Contact your dealer or Servicer
	747	First 64KB RAM chip or data line failure-bit 7	Contact your dealer or Servicer
	748	First 64KB RAM chip or data line failure-bit 8	Contact your dealer or Servicer
	749	First 64KB RAM chip or data line failure-bit 9	Contact your dealer or Servicer
	750	First 64KB RAM chip or data line failure-bit 10	Contact your dealer or Servicer
	751	First 64KB RAM chip or data line failure-bit 11	Contact your dealer or Servicer
	752	First 64KB RAM chip or data line failure-bit 12	Contact your dealer or Servicer
	753	First 64KB RAM chip or data line failure-bit 13	Contact your dealer or Servicer
	754	First 64KB RAM chip or data line failure-bit 14	Contact your dealer or Servicer
	755	First 64KB RAM chip or data line failure-bit 15	Contact your dealer or Servicer
	756	First 64KB RAM chip or data line failure-multi-bit	Contact your dealer or Servicer
	757	First 64KB odd/even logic failure	Contact your dealer or Servicer
	758	First 64KB address line failure	Contact your dealer or Servicer
	759	First 64KB RAM parity test failure	Contact your dealer or Servicer

Power-on diagnostic and boot error messages (continued)

Countdown number	Error message number	Message	Solution
	700	Shadow of system BIOS failed	Contact your dealer or servicer
	701	Shadow of onboard video BIOS failed	Contact your dealer or servicer
	702	Off-board video BIOS not found	Contact your dealer or servicer
	703	Onboard video BIOS conflict at C0000H	Contact your dealer or servicer
	704	Fatal onboard video BIOS conflict at C0000H	Contact your dealer or servicer
	705	Onboard video BIOS conflict at E0000H	Contact your dealer or servicer
	706	Fatal onboard video BIOS conflict at E0000H	Contact your dealer or servicer
690	690	CMOS power failure	Run SETUP or the EISA Configuration utility (ECU); contact your dealer or servicer if the problem persists or try setting jumpers E0292 and E0721 to set the CMOS to its default settings and write them to the flash memory
	691	CMOS checksum failure	
	692	Extended CMOS checksum failure	
	693	Default configuration failure, unable to write to FLASH memory (Note that this error will be displayed after video has been initialized.)	
680		Initialize EISA slots	Not an error
670		Initialize serial ports	Not an error
660		Initialize parallel ports	Not an error
655	655	DMA register failure (slave)	Contact your dealer or servicer
650	650	DMA register failure (master)	Contact your dealer or servicer

Power-on diagnostic and boot error messages (continued)

Countdown number	Error message number	Message	Solution
645	645	Programmable interrupt controller register test failure (master)	Contact your dealer or service
640	640	Programmable interrupt controller register test failure (slave)	Contact your dealer or service
620		Initialize interrupt vector table	Not an error
610		Enable timer tick interrupt	Not an error
600	600	Keyboard controller failure	Check the keyboard connection; if it is connected, the keyboard controller may have failed; contact your dealer or service
590		Check video configuration	Not an error
570	570	VGA/EGA configuration error	Run SETUP or the ECU; contact your dealer or service if the problem persists
540	540	VGA/EGA BIOS failed to initialize	
520		Initialize console redirection	Not an error
500		Display sign-on message	Not an error
490	490	No timer tick interrupt	Contact your dealer or service
480	480	Shutdown failure	Contact your dealer or service
460	460	Fail-safe timer NMI failure	Contact your dealer or service
	461	Software port NMI failure	Contact your dealer or service

Power-on diagnostic and boot error messages (continued)

Countdown number	Error message number	Message	Solution
450		Chip initialization 6	Not an error
440	440	Gate A20 failure	Contact your dealer or servicer
	441	Unexpected interrupt in protected mode	The system received an interrupt while in protected mode (probably while testing memory); contact your dealer or servicer if the problem persists
430	430	Timer 2 failure	Contact your dealer or servicer
390		Initialize keyboard flags	Not an error
370	370	Keyboard controller failure	Check the keyboard connection; if it is connected, the keyboard controller may have failed; contact your dealer or servicer if the problem persists
	371	Keyboard clock line failure	
	372	Keyboard data line failure	
	373	Keyboard stuck key failure	
	374	Keyboard failure	
350		Reinitialize keyboard controller	Not an error
330		Initialize auxiliary device	Not an error
310		Initialize keyboard controller output port	Not an error

Power-on diagnostic and boot error messages (continued)

Countdown number	Error message number	Message	Solution
300		Initialize gate A20	Not an error
290	290	Memory parity failure at <i>nnnn:0000</i> to <i>nnnn:FFFF</i>	One of the SIMMs or its associated circuitry failed; make sure all SIMMs are installed correctly; contact your dealer or service if the problem persists
	291	Memory data line failure at <i>nnnn:0000</i> to <i>nnnn:FFFF</i>	
	292	Memory odd/even logic failure at <i>nnnn:0000</i> to <i>nnnn:FFFF</i>	
	293	Memory double word logic failure at <i>nnnn:0000</i> to <i>nnnn:FFFF</i>	
	294	Memory high address failure at <i>nnnn:0000</i> to <i>nnnn:FFFF</i>	
	295	Memory addressline failure at <i>nnnn:nnnn</i> , Read <i>nnnn</i> Expecting <i>nnnn</i>	
	296	Memory read/write failure at <i>nnnn:nnnn</i> , Read <i>nnnn</i> Expecting <i>nnnn</i>	
	297	Decreasing available memory	
270		Initialize extended BIOS data area	Not an error

Power-on diagnostic and boot error messages (continued)

Countdown number	Error message number	Message	Solution
250		Chipset initialization 7	Not an error
230		Enable hardware interrupts	Not an error
210		Read keyboard ID	Not an error
190	190	Real-time clock failure	The internal battery for the real-time clock is probably dead; contact your dealer or servicer
160	160	Coprocessor failed	Contact your dealer or servicer
150		Check for invalid configuration	Not an error
140	140	Shadow of system BIOS failed	Contact your dealer or servicer
135		Access window into SETUP	Not an error
130		Initialize diskette subsystem	When the system boots, this message remains on the screen for about ten seconds and then the system continues booting
	130	Diskette drive failure	Run SETUP or the ECU and check all connections; contact your dealer or servicer if the problem persists
	131	Diskette drive 0 failure	
	132	Diskette drive 1 failure	

Power-on diagnostic and boot error messages (continued)

Countdown number	Error message number	Message	Solution
120	120	Hard drive configuration error	Check your configuration and hard disk drive type by running SETUP or the ECU; contact your dealer or servicer if the problem persists
	121	Hard drive controller failure	Run SETUP or the ECU and check all connections; contact your dealer or servicer if the problem persists
	122	Hard drive 0 failure	
110		Chipset initialization 9	Not an error
090	090	Internalcache test failed-cache disabled	Contact your dealer or servicer
080	080	nnnn0H optional ROM bad checksum =nn H	Correct the address conflict; contact your dealer or servicer if the problem persists
	083	Shadow of BIOS at C0000H-C7FFFH failed	Contact your dealer or servicer
	084	Shadow of BIOS at C8000H-CFFFFH failed	Contact your dealer or servicer
	085	Shadow of BIOS at E0000H-E7FFFH failed	Contact your dealer or servicer
070	070	Time of day clock not set	Run SETUP or the ECU and set the time and date
060	060	Keyboard is locked-please unlock	Unlock keyboard
040	040	Configuration error; dot n	Run the ECU; contact your dealer or servicer if the problem persists

Power-on diagnostic and boot error messages (continued)

Countdown Number	Error message number	Message	Solution
	041*	ID mismatch error; dot <i>n</i>	The board in dot <i>n</i> is bad or its ID does not match what the ECU expects mismatch is due to the wrong board in dot <i>n</i> or the wrong configuration file for the board; run the ECU to configure dot <i>n</i> or, if necessary, replace the board; contact your dealer or servicer if the problem persists
	042	Invalid ISA configuration information	An ISA board is improperly configured; run the ECU and verify all jumper and switch settings
	043	Invalid EISA configuration information	An EISA board is improperly configured; run the ECU and verify all jumper and switch settings
	044	EISA configuration NOT ASSURED !	If you installed EISA option cards, this message appears the first time you boot your system after running SETUP; run the ECU to properly configure your system
020		Enable parity checking and NMI	Not an error
	000	Diskette read failure	There is no diskette in drive A; insert a diskette and try again; contact your dealer or servicer if the problem persists

Power-on diagnostic and boot error messages (continued)

Countdown number	Error message number	Message	Solution
	001	Not a bootable diskette	Remove the diskette from the drive and use a bootable diskette, or boot the system from the hard disk drive; contact your dealer or servicer if the problem persists
	002	No boot device available	Make sure you are using a bootable diskette or that your hard disk drive is formatted; contact your dealer or servicer if the problem persists
	003	Hard drive read failure	The hard disk drive may have failed; check your drive type by running SETUP or the ECU; check all cable connections contact your dealer or Servicer if the problem persists
	004	No boot sector on hard drive	The hard disk drive is not formatted as a bootable disk; format your hard disk as necessary; contact your dealer or Servicer if the problem persists

- * The system test the EISA slots from 1 to 8. If this error occurs, the system will not Scan the rest of the EISA slots not yet tested. You must correct the problem for your system to work properly.

Run-time Error Messages

The table below lists the run-time error messages and some basic solutions to the problems. Check the appropriate section(s) in this appendix for other solutions.

Run-time error messages

Countdown Number	Error message number	Message	Solution
980	980	Unresolved memory parity error	An installed SIMM has failed; replace the SIMM and run SETUP or the ECU; contact your dealer or servicer if the problem persists
	981	Memory parity error at <i>nnnn:nnnn</i>	An installed SIMM has failed; replace the SIMM and run SETUP or the ECU; contact your dealer or servicer if the problem persists
	982	I/O expansion board NMI; dot <i>n</i>	Run the ECU; contact your dealer or servicer if the problem persists
	983	Unresolved I/O expansion board NMI	Run the ECU; contact your dealer or servicer if the problem persists
	984	Expansion board disabled	There is a configuration error or the option card is defective; run the ECU; contact your dealer or servicer if the problem persists
	985	Fail-safe timer NMI	The option card is defective; replace the card and run the ECU; contact your dealer or servicer if the problem persists

F&n-time error messages (continued)

Countdown Number	Error message number	Message	Solution
	986	Unresolved bustime-out NMI	The option card is defective; replace the card and run the ECU; contact your dealer or servicer if the problem persists
	987	Bustime-out NMI; dot <i>n</i>	Run the ECU; contact your dealer or servicer if the problem persists
	988	Software NMI	Run the ECU; contact your dealer or servicer if the problem persists
	970	Unexpected software interrupt	An error has occurred in a software utility; turn the system off and back on again; contact your dealer or servicer if the problem persists
	971	Unexpected hardware interrupt	Indicates that any of a variety of hardware problems has occurred; check all cables, connections, jumpers, and option card settings run the ECU; contact your dealer or servicer if the problem persists

Error Tone Codes

If power-on diagnostic tests detect an error but cannot display an error message, the computer sounds an error tone code. The tone code is a distinct pattern of beeps that identifies the error, such as one beep-two beeps-one beep. If the error is serious (fatal) the computer locks up, but if the error is not serious (non-fatal) you can continue using your computer.

The tables below list the fatal and non-fatal error codes

Error tone codes for fatal errors

Error tone code	Description
1-1-3	Real-time clock write/read failure
1-1-4	ROM BIOS checksum failure
1-2-1	Programmable interval timerfailure
1-2-2	DMA initialization failure
1-2-3	DMA page register write/read failure
1-3-1	RAM refresh verification failure
1-3-3	First 64KB RAM chip or data line failure (multi-bit)
1-3-4	First 64KB RAM odd/even logic failure
1-4-1	First 64KB RAM addressline failure
1-4-2	First 64KB RAM parity test in progress failure
2-1-1	First 64KB RAM failure-bit 0
2-1-2	First 64KB RAM failure-bit 1
2-1-3	First 64KB RAM failure-bit 2
2-1-4	First 64KB RAM failure-bit 3
2-2-1	First 64KB RAM failure-bit 4
2-2-2	First 64KB RAM failure-bit 5
2-2-3	First 64KB RAM failure-bit 6
2-2-4	First 64KB RAM failure-bit 7
2-3-1	First 64KB RAM failure-bit 8
2-3-2	First 64KB RAM failure-bit 9
2-3-3	First 64KB RAM failure-bit A
2-3-4	First 64KB RAM failure-bit B
2-4-1	First 64KB RAM failure-bit C
2-4-2	First 64KB RAM failure-bit D

Error tone codes for fatal errors (continued)

Error tone code	Description
2-4-3	First 64KB RAM failure-bit E
2-4-4	First 64KB RAM failure-bit F
3-1-1	Slave DMA register failure
3-1-2	Master DMA register failure
3-1-3	Master interrupt mask register failure
3-1-4	Slave interrupt mask register failure
3-2-4	Keyboard/mouse controller test failure

Error tone codes for non-fatal errors

Error tone code	Description
3-3-4	Screen memory test failure
3-4-1	Screen initialization test failure
3-4-2	Screen retrace test failure

Power or Lock-up Problems

If you are having trouble with the computer's power or if the system locks up, see the suggestions below.

The computer does not start when you turn it on.

Turn off the power and check the following:

- ☐ Be sure all cables are securely connected to the computer.
- ☐ Check that the computer and monitor power cords are plugged completely into their electrical outlets.
- ☐ Test the outlet to see if it supplies power.

The computer starts but the screen is blank.

See “Monitor Problems” below.

The computer starts but does not boot.

If the computer starts but does not load your operating system, the problem could be caused by many different factors.

First make sure you have correctly formatted your hard disk and have properly installed your operating system on it. (See “Hard Disk Problems” on page A-24.) Also be sure you enabled the IDE hard disk drive controller and selected the correct drive type in the SETUP program or the EISA Configuration utility.

If you do not have a hard disk, insert a system diskette in drive A and press the reset button.

The computer does not respond when you type or click the mouse.

If you have just turned on the computer, check the following:

- ☐ Make sure your keyboard or mouse is securely connected to the computer.
- ☐ Make sure your keyboard and mouse are not locked. Check the Keyboard/ Mouse Lock indicator to see if they are locked. If so, press the Keyboard/ Mouse Lock button to unlock them. See Chapter 4 for instructions.
- ☐ If you entered the wrong password and cannot access your system, see “Password Problems” below.

If you are running a software program, try these procedures:

- ☐ If your computer is processing a complicated command or performing a complex task, it may take a long time to complete its work. If the computer does not respond after a reasonable length of time, proceed to the next step.
- ☐ Press **Num Lock**. If the Num Lock indicator light on the keyboard lights up, the computer is probably still processing a command. If it does not light up, proceed to the next step.
- ☐ Press **Ctrl Alt Del** or press the reset button to exit the software program and reboot the computer.
- ☐ If resetting the computer does not work, turn it off and wait at least five seconds. If you do not have a hard disk drive, insert a bootable diskette in drive A. Then turn on the computer and try running the program again.
- ☐ If none of these procedures work, check your software documentation or contact your software manufacturer for technical support.

Password Problems

If you set a power-on, network, or keyboard password and you have trouble entering it, check the section below that describes the problem you are having.

You enter the password, but nothing happens

Type the password again and press **Enter**. You have three chances to enter a power-on or network password correctly before the system locks up. If this happens, press the reset button to reboot the computer and try again. You can try as many times as necessary to enter a keyboard password.

You want to change or delete the password.

See Chapter 4 for instructions on changing or deleting your password.

You have forgotten the current power-on password.

If you have forgotten your power-on password and cannot use your computer, follow these steps:

1. Turn off the computer, remove the system covers, and clear the password by moving the main system board jumper E0390 from position 1-2 to position 2-3. See Chapter 5 for instructions on removing the covers and Chapter 6 for instructions on changing the jumper setting.
2. Replace the computer's cover. (See Chapter 5.)
3. If you do not have a hard disk, insert a bootable diskette in drive A. Turn on the computer and allow it to load the operating system.
4. Then turn off the computer, remove the covers, and enable the password function by moving main system board jumper E0390 from position 2-3 to position 1-2.
5. Replace the computer's covers.

If you do not want to set a new password, you do not need to do anything else. (When you turn on your computer, you will not see the Enter password prompt.)

If you want to set a new password, go to step 6.

6. If you ran the SETUP program to configure your computer the last time, go to step 7. If you ran the EISA Configuration utility, go to step 8.

7. Turn on your computer. When you see the prompt, press **F1** to run **SETUP**. Follow the instructions in Chapter 2 to set a new power-on password using the **SETUP** program.
8. Insert the System Configuration diskette in drive A and turn on the computer. Follow the instructions in Chapter 4 to set a new power-on password using the **EISA System Utilities**.

If you need to activate your new power-on password as a network password, see Chapter 4 for information about using the **EISA System Utilities** to activate a network password.

Note

If you set a new power-on password, it automatically becomes your keyboard password. If you want to set a different keyboard password, see Chapter 4 for instructions.

Keyboard Problems

If the keyboard is not working correctly, see the suggestions below.

- ☐ Make sure the keyboard is securely connected to its port.
- ☐ Make sure your keyboard is not locked. Check the keyboard/ mouse lock indicator to see if it is locked. If so, press the keyboard/ mouse lock button to unlock it. See Chapter 4 for instructions.
- ☐ If you are still having problems, see “Power or Lock-up Problems” above.

Monitor Problems

See the suggestions below if you have trouble with your monitor.

There is no display on the screen.

- ☐ Make sure the monitor cables are securely connected to the monitor, the computer, and the electrical outlet.
- ☐ Check that the monitor's power switch is on and that the power light on the monitor is lit. If the power light is on but you still do not see anything on the screen, check the monitor's brightness and contrast controls.
- ☐ Check to see if the electrical outlet supplies power.
- ☐ You may have redirected your computer's input and output functions to one of the serial ports. If you need to disable this option, set jumper B0292 on the main system board to return to the computer's configuration options to their default settings. See Chapter 6 for instructions.

The monitor does not display images correctly.

- ☐ Make sure your monitor and display adapter match. If you are using a display adapter card, be sure any switches or jumpers on the card and on the computer's main system board are set properly. See Chapter 6 and the manual that came with the card for instructions.
- ☐ Be sure you chose the correct display adapter type in the SETUP program or the EISA Configuration utility. See Chapters 2 and 3.
- ☐ If you are running an application program, see if you need to configure it for the type of monitor and display adapter you have. Also, make sure you are using the correct monitor and display adapter for your software.

Diskette Problems

- ☐ Check to see if you inserted the diskette upside down or did not insert it all the way.
- ☐ If the diskette is blank, make sure it is formatted.
- ☐ Place the diskette in the drive of another computer and repeat the operation. If this works, the trouble may be in your diskette drive. See “Diskette Drive Problems” below.
- ☐ Make sure you enabled the built-in controller and selected the correct diskette drive type(s) when you ran the SETUP program or the EISA Configuration utility. See Chapters 2 and 3 for instructions.
- ☐ If you cannot write to the diskette, make sure jumper E0291 is set to position 2-3 to enable writes to the diskette drive. See Chapter 6.

Diskette Drive Problems

If you think there is something wrong with your diskette drive, check this section.

You see an error message or have difficulty with a diskette drive.

- ☐ If you removed your diskette drive and reinstalled it yourself, review all the instructions in Chapter 7.
- ☐ Be sure that you ran the SETUP program or EISA Configuration utility to enable the built-in diskette drive controller and set the correct diskette drive type. See Chapters 2 and 3 for instructions.
- ☐ If you are still having trouble with the drive, contact your EPSON dealer or Authorized EPSON Servicer.

The diskette drive is making loud or unusual noises

Contact your EPSON dealer or Authorized EPSON Servicer.

Hard Disk Problems

If you think there is something wrong with your hard disk, see the suggestions below.

You have problems with a newly installed drive.

- ☐ If your EPSON dealer or Authorized EPSON Servicer installed the drive, consult your dealer or servicer about the problem.
- ☐ If you installed the hard disk yourself, make sure you carefully followed all the instructions in Chapter 7. Review the procedures and check all the cable connections to make sure you installed it correctly. Also check the jumper settings on your drive to be sure they are set correctly.
- ☐ If you are having trouble with a SCSI hard disk, make sure you have set the appropriate SCSI ID number for the drive and that you installed the terminators properly on the first and last SCSI devices. See your SCSI drive documentation for more information.
- ☐ Verify that your hard disk drive was physically formatted. This type of format is usually done by the manufacturer.
- ☐ Verify that you ran the SETUP program or the EISA Configuration utility to enable the built-in IDE hard disk controller and have defined your hard disk drive type or parameters correctly. See Chapters 2 and 3.

- ☐ If you are sure the hard disk has been installed and prepared properly but you cannot access the drive, review the instructions in your operating system manual. Make sure you performed the necessary steps in the installation process for your configuration.
- ☐ If you still cannot identify the problem, consult the dealer from whom you purchased the drive.

You notice a reduction in hard disk performance.

- ☐ The data on the disk may have become fragmented. You may want to back up all your data and then use a disk optimization utility to reorganize the files on your disk. Contact your dealer or servicer for information.
- ☐ If you cannot access data on your hard disk or you are receiving read/write errors, the disk may have a physical problem. If the problem persists, contact the dealer from whom you purchased the drive.

Software Problems

- ☐ Make sure you are using the correct procedure for starting the program and that it is installed correctly.
- ☐ Be sure you are logged onto or specifying the correct drive and directory.
- ☐ Some programs must run at a slower operating speed. Check your software manual to see if this is the case, and change the operating speed of the processor if necessary. See “Changing the Processor Speed” in Chapter 4 for instructions.

- ☐ If you are unable to run the SETUP program or the EISA Configuration utility, make sure you have write-enabled your computer's FLASH memory. Check to see if jumper E0721 is set to position 1-2, as described in Chapter 6.
- ☐ If you are still having problems with your software, consult your software documentation or contact the manufacturer for technical support.

Printer Problems

- ☐ Make sure the printer has power and is properly connected to the computer. (Also, be sure your printer has paper in it.)
- ☐ Check the printer manual for the printer's correct DIP switch or control panel settings.
- ☐ If you are using more than one parallel port or more than one serial port, check the primary and secondary port settings in the SETUP program or the EISA Configuration utility to make sure they are correct. See Chapters 2 and 3 for instructions.

Option Card Problems

- ☐ Make sure the option card is properly inserted in its slot. Check the installation procedure described in Chapter 6 and also see the instructions that came with the card.
- ☐ Be sure that you ran the SETUP program or the EISA Configuration utility to update your configuration after installing the card. See Chapters 2 and 3.

- ❑ Check to see if you set the necessary DIP switches or jumpers on the option card. Also be sure you performed the correct setup procedures for the software you are using with the option card. See your option card manual and check your EISA Configuration utility information for the card.
- ❑ Check the computer's power supply limits in Appendix B and your option card documentation to be sure you have not installed a card that exceeds the total amperage allowable in your system.
- ❑ If necessary, make sure that you used the proper cable to connect the device to the option card connector.

Memory Module Problems

- ❑ If the memory count displayed by power-on diagnostics, the SETUP program, or the EISA Configuration utility is incorrect, you or your dealer may not have installed the SIMMs correctly. The SIMMs may be installed in the wrong sockets, they may be the wrong type of SIMM, or they may not be inserted all the way into their sockets.

If your dealer installed the SIMMs for you, contact your dealer; do not attempt to correct the problem yourself. If you installed them, see "Memory Modules" in Chapter 6 and make sure you followed all the instructions correctly.

- ❑ Check the speed and type of your SIMMs. Install only 80ns (1MB, 2MB, 4MB, or 8MB) or 70ns (16MB or 32MB), 36-bit, 72-pin, tin-plated, fast-page mode SIMMs.
- ❑ If you installed 16MB or 32MB SIMMs, be sure you changed the settings of jumpers E0391 and/or E0392 on the main system board to indicate the type of SIMMs you are using. See Chapter 6 for instructions.

- ☐ Be sure to run the SETUP program or the EISA Configuration utility after you install or remove memory modules to automatically update your configuration. See Chapters 2 and 3 for instructions.
- ☐ If you are still having trouble with your SIMMs, write down any error messages you see and contact your dealer or servicer.

Mouse Problems

If your mouse is not working correctly, see the following guidelines.

- ☐ Make sure that your mouse is securely connected to its port.
- ☐ Make sure your mouse is not locked. Check the keyboard/ mouse lock indicator to see if it is locked. If so, press the keyboard/ mouse lock button to unlock it. See Chapter 4 for instructions.
- ☐ Check to see if you installed your mouse driver program and loaded it into your computer's memory correctly.
- ☐ Be sure that you set the built-in mouse port option in the SETUP program or the EISA Configuration utility correctly for your mouse port. See Chapters 2 and 3 for more information.
- ☐ If you are still having trouble with your mouse, check the documentation that came with it for troubleshooting information or contact your mouse dealer.

SCSI Drive Problems

If a SCSI device is not working correctly, see the guidelines below.

- ☐ Make sure that the cables connecting any external SCSI devices are firmly inserted in their ports on the devices.
- ☐ Verify that you have set the correct SCSI ID numbers and properly installed the SCSI terminators. See your SCSI device documentation for more information.
- ☐ If you have trouble with an internal SCSI drive that you installed yourself, review the installation instructions in Chapter 7 to make sure you performed all the necessary steps.
- ☐ If you still have trouble with a SCSI drive, contact your EPSON dealer or Authorized EPSON Servicer.

Appendix B

Specifications

Main System Board

System memory	8MB RAM standard on two 4MB SIMMs; expandable using 1MB, 2MB, 4MB, 8MB, 16MB, or 32MB single- or double-sided SIMMs up to 128MB (maximum); SIMMs must be 80ns, 36-bit, 72-pin, tin-plated, fast-page mode type; 16MB and 32MB SIMMs may be 70ns, 36-bit, 72-pin, tin-plated, fast-page mode type
BIOS	256KB on two 128KB FLASH EEPROM devices for system and video BIOS
Shadow RAM	Automatically copies the system BIOS from ROM into RAM; shadow RAM addresses for video BIOS and external BIOS are software selectable
Video RAM	512KB standard; expandable to 1MB using four 256KB x 4, 60ns, fast-page mode video DRAM chips
Clock/calendar	Real-time clock, calendar, and CMOS RAM for BIOS use; battery backup; contents can be cleared to default values by jumper setting

CPU Card

CPU

Intel 486DX2, 66 MHz microprocessor;
Intel Pentium 60 MHz or 90 MHz
microprocessor; Intel Dual Pentium
66 MHz microprocessor; simulated 8 MHz
processor speed selectable through
software or keyboard command

Cache memory

8KB internal cache in the 486DX2/ 66
microprocessor; 128KB Intel cache module
with write-through, two-way set
associative cache memory and controller

16KB internal cache in the Pentium/60
and 90 processors; 256KB (Pentium/ 60) or
512KB (Pentium/ 90) cache module with
write-back, two-way associative cache
memory

Dual Pentium/ 66 microprocessor contains
two independent 256KB write-back cache
modules

Interfaces

Monitor

15-pin, D-shell analog connector

Serial

Two RS-232-C, 9-pin, D-shell connectors;
asynchronous

Parallel

25-pin, D-shell connector; supports
IBM AT compatible or PS/2 compatible
(bidirectional) signals; software selectable

Mouse

Mini DIN, 6-pin connector for PS/2
compatible mouse or other pointing device

Keyboard

Mini DIN, 6-pin connector for PS/2 compatible keyboard

SCSI

Built-in Twin Channel SCSI interface; two SCSI buses, each supporting up to seven SCSI devices, including the adapter (interface)

Option slots

Eight 32-bit EISA bus master expansion slots (16-bit and S-bit ISA compatible)

Speaker

Internal; operation controllable by software

Controllers**Diskette**

Controller on the main system board supports up to two diskette drives in any of these formats:

5.25-inch, high-density, 1.2MB
5.25-inch, double-density, 360KB
3.5-inch, high-density, 1.44MB
3.5-inch, double-density, 720KB

Hard disk

Interface on the main system board supports up to two IDE drives with embedded controllers

SCSI

Two SCSI-2 interfaces on main system board feature 32-bit EISA bus master interface; TwinChannel SCSI supports transfers up to 10MB per second

Video

VESA compliant VGA controller supports resolution up to 800 x 600 in 256 colors and 1024 x 768 in 16 colors with 512KB of VRAM; supports up to 1024 x 768 in 256 colors with 1MB of VRAM

Keyboard

Detachable, two position, 101 or 102 sculpted keys; country-dependent main typewriter keyboard; numeric/ cursor control keypad; four-key cursor control keypad; 12 function keys

Mass Storage

Up to nine half-height devices maximum; one full-height or two half-height internal bays for IDE or SCSI hard disk drives; four half-height or two full-height internal bays for SCSI hard disk drives; three half-height externally accessible bays

Physical Characteristics

width

8.5 inches (21.5 cm)

Depth

23 inches (58.4 cm)

Height

20.4 inches (51.8 cm)

Weight

44.5 lb (20 kg) with one diskette drive only

Environmental Requirements

Condition	Operating range	Non-operating range
Temperature	50° to 95° F (10° to 35° C)	40° to 149° F (-40° to 65° C)
Humidity (non-condensing)	20% to 80% at 95° F (35° C)	20% to 92% at 149° F (65° C)
Altitude	To 10,000 ft (3,048 m)	To 50,000 ft (15,240 m)

Power Supply

Type 230W, fan-cooled, switch-selectable voltage

Input ranges 100 to 120 VAC and 200 to 240 VAC,
50 to 60 Hz

Maximum current At 115 Volts, 5 Amps; at 230 Volts, 4 Amps

Maximum outputs

Output voltage (VDC)	Maximum continuous current (Amps)	Minimum load	Peak surge	Watts
+5	30A	3A	30A	150W
-5	0.5A	3A	0.5A	2.5W
+12	8A	0.25A	11A	96W
-12	1A	0A	Maximum capacitive load <350 F	12W

Output cables Three main system board cables; nine
mass storage cables

5 Volt current limitation

To determine the maximum allowable amperage of your option cards and other equipment, use the table below. It lists the typical system +5 Volt current drain for your main system board and other components. Check the 5 Volt amperage rating of the equipment you install and make sure the total system amperage does not exceed 30 Amps.

System current drain

Component	+5V amperage (typical)	+12V amperage	-12V amperage
Main system board	4.0A	.06A	.06A
Total installed memory on SIMMs		—	—
4MB	2.0A		
8MB	2.1A		
64MB	2.4A		
128MB	2.8A		
CPU cards:		—	—
486DX2/66 with 128KB cache	4.1A		
Pentium 60	5.4A		
Pentium 66	5.8A		
Pentium 90	1.2A		
Dual-Pentium 66	11.9A		
CPU card integrated cache (128KB)	2.5A	—	—
3.5-inch diskette drive	0.5A	—	—
EISA option slot *	2.0A	—	—
Cooling fan	—	0.3A	—

- * Each EISA option slot is rated at 4.5A; however, average current consumption for all slots used should not exceed 3A per slot. Most EISA option cards draw 2A. If you install a card drawing more than 2A, install it in a lower numbered slot (such as 1 or 2) to ensure adequate cooling.

System Memory Map

Starting address	Hex address range	Size	Function
0KB	00000h to 07FFFh	512KB	Base memory
512KB	80000h to 9FFFFh	128KB	Base memory enabled in SETUP or the EISA Configuration utility
640KB	0A0000h to 0BFFFFh	128KB	Video RAM
768KB	0C0000h to 0C7FFFh	32KB	Offboard video BIOS (can be shadowed) or built-in SCSI BIOS (can be shadowed)
800KB	0C8000h to CFFFFh	32KB	Adapter BIOS extensions (can be shadowed)
832KB	0D0000h to DFFFFh	64KB	Adapter BIOS extensions
896KB	0E0000h to 0E7FFFh	32KB	Built-in video BIOS (can be shadowed or mapped to 0C0000h)
928KB	0E8000h to E9FFFh	8KB	EISA Configuration utility data
936KB	0EA000h to 0EBFFFh	8KB	Reserved memory
944KB	0EC000h to 0EFFFFh	16KB	Recovery BIOS
960KB	0F0000h to FFFFFh	64KB	System BIOS
1MB	100000h to FFFFFFFh	15MB	Extended memory
Top of system memory	0C8000h to 0DFFFFh	96KB	Reserved for ROM and RAM on expansion boards
Top of system memory	0h to 800FFFFh	2GB + 1MB	Limit of system architecture

Input/output Addresses

I/O address	Device
000 - 00F	Slave DMA controller 1
020 - 021	Master interrupt controller 1
026	Configuration controller index registers
027	Configuration controller data registers
040 - 043	Interval timer 1
048 - 04B	Interval timer 2
060,064	Keyboard/mouse controller
061	NMI and diagnostic port
070	Real-time clock
070	Enable NMI
071	Real-time clock
078	BIOS loop timer
080	Power-on diagnostics error codes
081 - 08F	DMA page register
092	System control port
0A0 - 0A1	Slave interrupt controller 2
0C0-0DE	Master DMA controller 2
0F0	Reset numeric coprocessor
0F8 - OFF	Numeric coprocessor
1F0 - 1F8	IDE hard drive controller
278 - 27B	Parallel port 2 (LPT2); parallel port 3 (PS/2-compatible)
2C0-2DF	Clock/calendar
2E8 - 2EF	Serial port 4 (COM4)
2F8 - 2FF	Serial port 2 (COM2)

Input/output addresses (continued)

I/O address	Device
378 - 37F	Parallel port 1 (LPT1); parallel port 2 (PS/2-compatible)
3B0 - 3BB	WD90C31 onboard video registers
3BC - 3BE	Parallel port 3 (LPT3); parallel port 1 (PS/2-compatible)
3BF - 3DF	16C552 registers
3E8 - 3EF	Serial port 3 (COM3)
3F0 - 3F5	Onboard diskette controller
3F6	Onboard IDE hard drive controller
3F7	Onboard IDE read
3F7	Onboard diskette controller read/write
3F8 - 3FF	Serial port 1 (COM1)
400 - 40B	Extended DMA controller 1 registers
40C - 40F	Extended control/terd registers
461 - 464	Extended NMI register
464 - 465	Extended busmaster
480 - 48F	Extended DMA page register
4C2 - 4CE	Extended DMA 2 registers
4D0	Extended interrupt 1
4D1	Extended interrupt 2
4D4	Extended DMA 2 chaining
4D4	Extended DMA 2 write mode
C02 - C04	System baseboard configuration information
C80 - C83	System baseboard EISA ID register
C84	System baseboard enable
C85 - C87	Reserved
9nnn - 9FFF	Built-in SCSI controller

System Interrupts

IRQ	Device
NMI	Parity error
0	Reserved, interval timer
1	Reserved, keyboard buffer full
2	Reserved, cascade interrupt from slave PIC
3	Onboard serial port 2 (COM2), if enabled
4	Onboard serial port 1 (COM1), if enabled
5	LPT2, if enabled
6	Onboard diskette drive controller, if enabled
7	LPT1, if enabled
8	Real-time clock (RTC)
9	User definable; can be set for EISA option cards using the EISA Configuration utility (ECU)
10	COM3, if enabled; can be set for EISA option cards using the ECU
11	COM4, if enabled; can be set for EISA option cards using the ECU SCSI controller, if enabled; can be set for EISA option cards using the ECU
12	Onboard PS/2 mouse port, if enabled
13	Reserved, math coprocessor
14	IDE hard drive controller, if enabled
15	Userdefinable; can be set for the following (up to three choices) using the ECU: EISA option cards IDE hard disk drive controller Built-in video controller, programmable to 9, 10, 11, or 15 Built-in SCSI controller, programmable to 9, 10, 11, or 15

DMA Channels

Channel	Device
0	Option card
1	Option card
2	Diskette drive
3	IDE hard disk drive
4	Reserved
5	Option card
6	Option card
7	Option card

Glossary

Accessspeed

The length of time it takes for an information storage device, such as memory or a disk drive, to return a piece of data requested by another device. For example, your computer's SIMMs return data requested by the microprocessor at an access speed of 70ns or 80ns (nanoseconds).

Address

A number or name that identifies the location where information is stored in a computer's memory.

ASCII

American Standard Code for Information Interchange. A standardized numeric coding system for representing characters, such as numbers, letters, and graphic symbols. Each of the 256 ASCII codes occupies one byte of storage. All computers, printers, and programs can use files transmitted in standard ASCII code. Extended ASCII codes can be used only by hardware and software designed to interpret them.

Asynchronous

A method of data transmission in which one machine sends data, one character at a time, to another machine at variable intervals that do not need to be synchronized to a timing device, such as a system clock.

Base memory

See Conventional memory.

BIOS

Basic Input/ Output System. Routines in ROM (Read Only Memory) that handle the transfer of information among various hardware components, and between the hardware and your operating system and other software.

Bus

A wire or group of wires that sends information from component to component in the computer. The speed of a bus increases by the number and width of the channels the bus uses to move data.

Cache

A high-speed type of memory buffer that stores frequently used data where your microprocessor can access it faster.

CFG (configuration file)

A file that provides the EISA Configuration utility with all the information it needs about your system board or an option card. All EISA cards and some ISA cards come with CFG files.

CMOS

Complementary Metal-Oxide Semiconductor. A type of low-power silicon chip used for RAM and switching applications that is backed up by a battery.

Configuration

The particular setup of your computer's internal and external components. A typical configuration consists of a computer with a certain amount of memory, one diskette drive, and one hard disk drive connected to a monitor, printer, and keyboard.

Conventional memory

The memory in the computer below 1MB that is available to MS-DOS and application programs-usually 640KB. Also called base memory or main memory.

Coprocessor

See Math coprocessor.

Copy-protected program

A program containing a software “lock” that prevents it from being copied. Some of these programs require you to leave the program diskette in the drive while *you* use it. See also *Key disk*.

CPU

Central Processing Unit. The integrated circuit (chip) responsible for integrating program instructions, performing calculations, and controlling all input and output operations.

See also Microprocessor.

Default

Any value or setting choice that the computer or a program makes when the user does not specify an alternative. A default value stays in effect unless you override it temporarily by changing the value or you reset the default value itself.

Device driver

A file containing instructions that allow your computer to recognize and communicate with a device. The device may be a printer, monitor, or other type of device.

EISA

Extended Industry Standard Architecture. A bus standard for IBM compatible computers that extends the ISA bus architecture to 32 bits and allows more than one option card to share the bus easily.

Expanded memory

Memory that specially written MS-DOS programs can use when an expanded memory manager program maps that memory into an accessible area. See also *LIM EMS 4.0*.

Expanded memory

Memory above 1MB that is accessed by the 386 or 486 microprocessors when they are operating in protected or virtual mode. This memory is available to OS/2 programs, but is available to MS-DOS only if an extended memory manager program is installed. See also *Expandedmemory* and OS/2.

fist-page mode

A dynamic memory mode that allows successive addresses to access the same DRAM page by changing the column addresses.

RASH memory

Non-volatile, rewritable, random access memory. Your computer's BIOS and EISA configuration information is temporarily stored in a FLASH memory device.

Hexadecimal

A base-16 numbering system that represents the binary numbers used by a computer. Decimal numbers between 0 and 255 can be expressed by two-digit hexadecimal numbers made up of the numbers 0 through 9 and the letters A through F.

IDE

Integrated Drive Electronics. A type of hard disk drive interface in which the controller is located on the drive, instead of on a controller card. Your computer includes an interface for up to two IDE hard disk drives on the main system board.

ISA

Industry Standard Architecture. The 8- or 16-bit bus standard developed for IBM compatible computers.

Key disk

A diskette containing a copy-protected program and that must remain in a diskette drive while you use the program. See also *Copy-protected program*.

LAN

Local Area Network. A series of computers connected by cables in order to share software, data, and peripheral devices, as well as communicate with each other. LANs are usually composed of at least two or more computers running special network software, such as Novell NetWare. Personal computers operating in a LAN environment can also be used as stand-alone computers.

LIM EWS4.0

Version 4.0 of the Lotus®/ Intel/ Microsoft Expanded Memory Specification-a description of a capability your computer has for supporting programs that use expanded memory. See also *Expanded memory*.

Mapping

The method used to mark the geographic location of a resource within the memory address space.

Math coprocessor

An optional device that enables the computer to process mathematical calculations faster by using floating point numbers instead of whole numbers. This speeds up certain math and graphics operations performed by programs that use this type of calculation.

Memory module

A small circuit board that contains surface-mounted memory chips. You can add memory modules to the main system board to expand your computer's memory. Commonly called a SIMM (single inline memory module).

Microprocessor

A small CPU contained on one semiconductor chip. See also *CPU*.

Modem

Modulator/ DEModulator. A device that allows a computer to transfer data to and from another computer by transmitting signals over telephone lines.

Multifrequency monitor

A monitor that accepts input at different frequencies and can display in a variety of resolutions.

Multitasking

The ability of a computer and an operating system to work on more than one command or task at a time. The tasks are actually not performed at the same time, but assigned priorities and rapidly processed by the computer in sequential order. See also OS/2 and UNIX.

Network server

The main computer in a network which controls access to the rest of the network computers (called workstations). The server also provides mass storage, programs, and other resources to the workstations.

Non-target modeling mode

A method you can use to run the EISA Configuration utility to create an SCI file for another computer. This mode prevents you from saving the information in the FLASH memory of the computer on which you are running the program.

OS/2

Operating System/2. The enhanced operating system developed jointly by Microsoft and IBM that provides protected mode processing and multitasking capabilities

Parity

A method used to verify the accuracy of data transmissions by making the total of the number of 1's in a group of bits odd (odd parity), even (even parity), or none (no parity).

Partition

(1) The area an operating system defines on a hard disk so you can use that area as though it were a physically separate device;
(2) to divide a hard disk into separate logical areas. You can create a primary partition and one or more extended partitions on a hard disk.

Power-on diagnostics

Tests stored in a computer's ROM that the computer runs to check its internal circuitry, peripheral device configuration, and operating status each time you turn it on or reset it.

RAM

Random Access Memory. The portion of the computer's memory used to run programs and store data while you work. All data stored in RAM is erased when you turn off or reset the computer; so you must store any data you want to keep on a storage device.

Refresh rate

The frequency with which a monitor can redraw a screen image. The faster the refresh rate, the less the screen will flicker.

ROM

Read Only Memory. A portion of memory that can only be read and cannot be modified. ROM uses power from a backup battery to retain its contents when you turn off the computer.

RS-232C

A widely used, standard type of serial communication. You can connect up to two RS-232C devices to the computer's built-in serial ports.

SCI files

System Configuration Information files. The file(s) created by the EISA Configuration utility that contain all the information about the option cards you have installed and how all of your system resources are allocated. The most current SCI file is called SYSTEM.SCI.

SCSI

Small Computer System Interface. A special input/ output bus that controls up to seven SCSI peripheral devices. Your computer contains a SCSI controller that supports two SCSI buses through two interfaces on the main system board.

Shadow RAM

The feature in your computer that copies the contents of the system, video, and any external BIOS ROMs into the RAM area of memory to speed up processing.

SIMM

See Memory module

UNIX

A powerful operating system that supports multitasking and is especially suited to multi-user environments. UNIX is compatible with a range of computers, from personal computers to mainframes. See also *Operating system*.

VGA/SVGA

Video Graphics Array/ Super Video Graphics Array. High-resolution (640 x 480 or greater) display adapter standards.

Write-protect

To protect the data on a diskette from being changed by placing a write-protect tab over the notch on a 5.25-inch diskette or by setting the write-protect switch on a 3.5-inch diskette. You can also write-protect a file on a disk by using software to designate the file read-only. When a diskette or file is write-protected, you cannot erase, change, or record over its contents.

Index

A

- AC inlet, 1-6
- Accessing components, 5-1 -9, 6-3, 6-10
- Advanced configuration options, 3-20 -21, 3-28 -29
- Alternate configuration 'riles, 3-29 -31
- Alternate SCI 'rile, 3-30 -31
- Altitude, B-5
- Application software
 - compatibility, 2-12
 - problems, A-25 -26
 - technical support, Intro-4
 - versions, A-2
- AUTOEXEC.BAT file, A-2

B

- Back panel, 1-6 -7
- Base memory, 2-9, 3-12
- Bays, mass storage, Intro-2, 7-1 -28, B-4
- Beeps, error, see Error tone codes
- BIOS
 - configuration options, 3-23 -24
 - ROM, 1-10, 2-2
 - shadow, 2-12 -13, B-1
 - specifications, B-1
 - system, 3-2, A-1
 - version number, A-1 -2
 - video mapping, 2-11, 3-16, 3-19
- Bit-interleaving technology, Intro-2
- Boards
 - see Main system board
 - see Option cards
- Boot device, 2-9, 3-19
- Boot errors, A-3 -13
- Built-in interfaces, see Interfaces
- Built-in SCSI, see SCSI

- Burst mode, EISA, Intro-2

- Bus

- EISA, Intro-2, 6-7
 - SCSI, 7-20

- Bus master expansion slots, 6-7, B-3

C

- Cache memory, 2-11, 3-13,4-21 -22, B-2
- Cards
 - see CPU card
 - see Option cards
- CD-ROM drive, Intro-2, 7-1
- CF command, 3-34 -36
- CFG 'riles, 1-5 -6, 1-10, 2-1, 3-4, 3-10 -11, 3-36
- Clock
 - calendar, B-1
 - real-time, 3-8, B-1
 - setting, 2-4 -5, 3-8 -9
- CMOS RAM, 3-2, 3-29 -31
- Components
 - accessing, 5-1 -9, 6-3, 6-10
 - locking up, 4-23
- CompuServe on-line support, Intro-5
- CONFIG.SYS file, A-2
- Configuration
 - alternate, 3-29 -31
 - files, see CFG files
 - memory, 6-11 -12
 - options, 3-12 -29
 - process, 3-4 -6
 - special, 4-29
 - system, 1-10, 3-1 -36, A-2
 - utility, see EISA Configuration utility
- Console redirection, 2-11, 3-15, 4-30
- Controllers, B-3 -4

Coprocessor, math, Intro-1

Cover

locking, 4-6, 4-23 -24

removing, 1-8, 5-2 -5

replacing, 5-5 -7

unlocking, 4-6

CPU card

installing, 6-4 -5

removing, 6-3 -4

specifications, Intro-1, B-2

CPU speed, 2-11, 3-17, 4-17 -19, B-2

Customer support, Intro-4 -5

D

Data transfer speed, Intro-2

Date, setting, 2-5, 3-1, 3-8 -9

Depth, computer, B-4

Device configuration options,
3-23 -25

Diskette drive

configuring, 1-10, 2-1, 2-5, 3-13

controller, Intro-2, 3-13, B-3

installing, 7-1 -27

interface, 6-2

operating without, 4-29

problems, A-23 -24

protective card, 1-8

removing, 7-1 -27

security, 4-7

specifications, B-3

types, B-3

Diskettes

double-density, B-3

high-density, B-3

problems, A-23

Disk format utility, 3-25

Display screen, see Monitor

DMA channels, B-11

Drive bays, see Mass storage bays

Drivers, video, 4-24 -26

Dual Pentium 66 ASIC chip, 6-6

E

EISA

burst mode, Intro-2

bus, Intro-2, 6-7

bus master expansion slots, Intro-I,
6-7, B-3

option cards, Intro-1, 1-5 -6, 3-1 -2,
3-4, 3-7, 3-10 -12

System Utilities, Intro-3, 4-10,
4-16 -22

technology, Intro-1

EISA Configuration utility

adding board, 3-11

advanced options, 3-28 -29

alternate files, 3-29 -31

CF command, 3-34 -36

CFG files, 1-5 -6, 1-10, 2-1, 3-34,
3-10 -11, 3-36

configuration process, 3-4 -6

hard disk drive types, 3-25 -27

performing steps, 3-9 -25

removing board, 3-11

running, Intro-5 -6, 1-10, 2-1, 3-1 -36

SD command, 3-33

setting date, 3-8 -9

starting, 3-7 -S

system board options, 3-12 -21

using keyboard, 3-5

using mouse, 3-5 -6

using on-line help, 3-6

using special modes, 3-31 -36

Electromagnetic interference, 1-1

Environmental

conditions, 1-1

requirements, B-5

Equipment log, 1-11 -12

Error messages, 2-3, A-3 -16

Error tone codes

fatal errors, 2-3, A-3, A-15 -17

non-fatal errors, A-3, A-15, A-17

Expansion slots, Intro-I -2

Extended memory, 2-9, 3-12

F

Fatal errors, 2-3, A-3, A-15 -17

FLASH

memory, 2-12, 3-18, 6-19 -20
user area, 2-12, 3-18

Floppy disk drive, see Diskette drive

Floppy diskette, see Diskettes

Front panel

locking, 1-3, 4-7, 4-23 -24
removing, 5-8
replacing, 5-9
unlocking, 4-7 -8

Furniture, using, 4-2 -3

G

Graphics adapter card, 6-8 -11

Grounding yourself, 6-16

H

Hard disk drive

configuring, 2-5, 2-13 -15, 3-12 -15,
3-25 -27
controller, 2-12, 3-13, B-3
IDE, Intro-2, 1-12, 2-5, 3-13, 6-2
indicator light, 1-9
installing, 7-1 -27
interface, Intro-2, 6-2
problems, A-24 -25
removing, 7-1 -27
SCSI, see SCSI
specifications, B-3
types, 2-13 -15, 3-12, 3-14, 3-25 -27
user-defined, 2-6, 2-13 -15, 3-12,
3-14, 3-25 -27

Height, computer, B-4

Help

on-line, 3-6
where to get, Intro-4 -5

Humidity, B-5

I

IDE, see Hard disk drive

Identifying system, A-I -2

Input/output addresses, EM -9

Input, redirecting, 2-1, 2-11, 3-15,
4-30

Installation overview, 1-2 -3

Interfaces

cables, 1-7
specifications, B-2 -3

Internal components, accessing,
5-1 -9

International marketing locations,
Intro-5

Interrupts, system, B-10

ISA

option cards, 1-5 -6, 1-10, 2-1, 3-1,
3-4, 3-11
technology, Intro-1

J

Jumpers

locating, 6-2
setting, 4-23, 5-4, 6-18 -20
viewing settings, 3-7

K

Key commands, 3-5

Keyboard

cable connector, 1-7, B-3
commands, 4-18
connecting, 1-3, 1-7, 1-9
locking, 1-8, 4-2, 4-8, 4-16 -17, 4-23 -24
operating without, 2-8, 3-17, 4-29
password, 4-9, 4-12, 4-15 -17
port, Intro-1, 1-6 -7
problems, A-21
reactivating, 4-8
specifications, B-3 -4
using, 3-5, 4-4 -5

Keyboard/ mouse lock button, 1-8 -9,
4-7 -8, 4-23 -24, 4-29
Keys, 1-3, 4-7

L

Language, 2-4
Lighting, 4-4
Lock-up problems, A-3, A-17 -19
Locking
 cover, 4-6, 4-23 -24
 front panel, 4-7, 4-23 -24
 keyboard, 1-8, 4-2, 4-8, 4-16 -17, 4-23
 mouse, 1-8, 4-2, 4-8, 4-23

M

Main system board
 accessing components, 5-14, 6-34,
 6-10
 jumpers, 6-2, 6-18 -20
 map, 6-2
 specifications, B-1
Marketing locations, international,
 Intro-5
Mass storage bays, Intro-2, 7-1 -28,
 B-4
Math coprocessor, Intro-1
Memory
 base, 2-9, 3-12
 cache, Intro-12 -11, 3-13, 4-21 -22, B-2
 configurations, 6-11 -12
 extended, 2-9, 3-12
 FLASH, 2-12, 3-18, 6-19 -20
 map, system, B-7
 modules, see SIMMs
 specifications, B-1
 test, 2-2, 2-8, 3-19
 video, 3-18, B-1
Microprocessor
 speed, see CPU speed
 upgrades, Intro-2, 6-3, B-2
Modem, connecting, 1-7

Monitor

connecting, 1-3, 1-7
operating without, 4-29
port, 1-6
positioning, 4-34
problems, A-22
specifications, B-2

Mouse

cable connector, 1-7, B-2
configuring, 2-10, 3-17
connecting, 1-3, 1-7, 1-9
locking, 1-8, 4-8, 4-23
port, Intro-1, 1-6 -7, 2-10, 3-17
problems, A-28
reactivating, 4-8
specifications, B-2
using, 3-5 -6, 4-4 -5

MS-DOS

version number, A-2
video drivers, 4-24 -25

N

Network

file server, Intro-3
option card, Intro-2
password, 4-9, 4-11
software, 4-9

Non-fatal errors, A-17

Non-target computer, 3-30 -31

Num Lock, 2-8, 3-18

O

On-line help, 3-6

On-line support, Intro-5

Operating system, Intro-2 -3, 1-3, 1-10, 1-12, 4-9, A-2

Option card(s)

adding, 3-9 -11
EISA, Intro-1, 1-5 -6, 3-1 -2, 3-4, 3-7,
3-10-12
installing, 1-5 -6, 5-4,6-1,6-7 -9
ISA, Intro-3 -4, 1-10, 2-1, 3-1, 3-4, 3-11

- Option card(s) [continued]
 - moving, 3-10
 - power supply limits, 1-6, B-6
 - problems, A-26 -27
 - removing, 3-9 -11, 5-4, 6-1, 6-10
 - slot specifications, B-3
- Optional equipment, installing, 1-3, 1-5 -6, 5-1 -2, 6-1 -20

P

- Parallel port, Intro-1, 1-6, 2-10, 3-14, B-2
- Password(s)
 - changing, 4-13 -15
 - deleting, 4-13 -15
 - entering, 4-12 -13
 - features, 4-9 -15
 - jumper, 6-19, A-19 -21
 - keyboard, 4-9, 4-12, 4-15 -17
 - network, 4-9, 4-11
 - power-on, 4-9, 4-11
 - problems, A-19 -21
 - setting, 2-8, 4-9 -12, 4-23
- Peripheral devices, connecting, 1-3, 1-6 -7, 1-9
- Physical characteristics, B-4
- Port(s)
 - keyboard, Intro-1, 1-6 -7
 - locating, 1-6
 - mouse, Intro-1, 1-6 -7, 2-10, 3-17
 - parallel, Intro-1, 1-6, 2-10, 3-14, B-2
 - serial, Intro-1, 1-6, 2-10, 2-13, 3-14, 3-19, B-2
 - VGA, 1-6, 2-6, 2-13, 3-15
- Posture, 4-5 -6
- Power
 - button, 1-8 -9
 - cord, 1-2, 1-7, 5-1, B-5 -6
 - indicator, 1-9
 - problems, A-17 -19
 - source requirements, 1-1 -2, 1-4 -5
 - supply, 1-4, B-5 -6
 - supply limits, 1-6, 6-7, B-5 -6

- Power-on diagnostic
 - errors, A-3 -13
 - tests, 2-2 -3, A-3 -4
- Power-on password
 - changing, 4-14
 - deleting, 4-14
 - setting, 4-9 -11
- Precautions, 1-8, 5-1 -2
- Printer
 - connecting, 1-3, 1-7
 - problems, A-26
- Processor speed, see CPU speed

R

- RAM, see Memory
- Real-time clock, 3-8, B-1
- Redirecting console, 2-1, 2-11, 3-15, 4-30
- Reset button, 1-8 -9, 2-2, 2-13, 2-16, 3-19, 4-12 -14, 4-1% -19, A-3
- ROM BIOS, see BIOS

S

- Safety instructions, iii-iv, 1-8, 5-1 -2
- SCI 'riles, 3-1 -2, 3-29, 3-30 -31
- SCSI
 - bus, 4-26, 7-20
 - drive indicator, 1-9
 - driver diskettes, Intro-3
 - drives, 1-12, 2-12, 3-19, 7-1, 7-18 -27, B-4
 - ID number, 1-12, 7-20
 - installing drive, 7-18 -25
 - problems, A-29
 - removing drive, 7-25 -27
 - SETUP options, 2-6
 - software, 4-28
 - subsystem, Intro-1 -2, 1-10, 2-1, 4-26 -28
 - terminating resistors, 4-27, 7-20
- SD command, 3-32 -34
- Security features, 4-23 -24

- Serial number, 1-11, A-1 -2
- Serial ports, Intro-1, 1-6, 2-10, 2-13, 3-14, 3-19, B-2
- SETUP program
 - exiting, 2-16
 - options, 2-4 -13
 - running, 1-10, 2-1 -16
 - starting, 2-2 -4
 - when not to use, 1-10, 2-1, 3-2
- Shadow RAM, 2-12, B-1
- SIMMs
 - configurations, 6-11 -12
 - gold-plated, 6-11
 - installing, Intro-1, 1-5, 5-4, 6-1, 6-12 -14
 - jumpers, 6-19
 - locating, 6-12
 - problems, A-27 -28
 - removing, 5-4, 6-1, 6-14 -15
 - specifications, B-1
 - tin-plated, 6-11, B-1
- Software, see Application software
- Speaker, 2-9, 3 - 17, 4-20 -21, B-3
- Specifications, B-1 -11
- Speed, see CPU speed
- Static electricity, 6-16
- System
 - choosing location, 1-1
 - identifying, A-1 -2
 - information, recording, 1-11
 - interrupts, 3-19, B-10
 - memory map, B-7
 - setting up, 1-1 -12
 - specifications, B-1 -12
 - turning on, 1-8 -9
- System BIOS, see BIOS

T

- Tape drive, 7-1
- Technical assistance, Intro-4 -5
- Technical specifications, B-1 -11
- Temperature, B-5
- Time, setting, 2-4, 3-1, 3-8 -9

- Time-dependent software, 2-11
- Troubleshooting, A-1 -29
- Turning on system, 1-8 -9

U

- User-definable drives, 2-6, 3-12

V

VGA

- adapter, 2-7, 2-13, 3-15, 6-11
- controller, Intro-1, 2-7, 2-13, 3-15, 6-18 -20, B-4
- feature connector, 6-1 -2, 6-8 -11
- port, 1-6, 2-6, 2-13, 3-15
- resolutions, B-4

Video

- adapter, 2-6, 2-13, 3-15, 6-11
- BIOS mapping, 2-12 -13, 3-16
- controller, Intro-1, 2-7, 2-13, 3-15, 6-18 -20, B-4
- drivers, 4-24 -26
- RAM, see Video memory
- refresh rate, 2-6 -7, 2-13, 2-16, 3-16, 3-18
- specifications, B-4

Video memory

- adding, 6-15 -17
- DIP chips, 6-15 -16, B-1

- Voltage selector switch, 1-2, 1-4 -6

W

- Weight, computer, B-4
- Width, computer, B-4
- Windows, video drivers, 4-25 -26
- Working comfortably, 4-2 -6